

Planning for a Disaster

One thing you can do to prepare for an emergency is to set up a Family Disaster Plan. For starters, keep insurance policies, documents and other valuable in a safe-deposit box. Then assemble a Disaster Supplies Kit containing:

- First Aid kit and manual
- Canned food and can opener
- Bottled Water
- Rubber boots, gloves & sturdy shoes
- Battery powered radio and flashlight
- Extra batteries
- Essential medicines
- Cash and credit cards

It is also a good idea to identify a place where you could go if told to evacuate, such as a friend's home in another town, a motel or a shelter.

For more information on disaster preparedness, visit the FEMA web site at

Weather Spotter Checklist

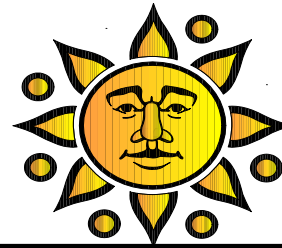
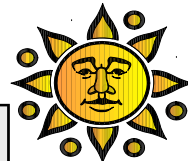
- ◆ **FUNNEL CLOUD or TORNADO**....Watch for cloud rotation and damage
- ◆ **HAIL**....Pea-sized or larger
- ◆ **HEAVY RAIN**....1/2 inch in 1 hr; 1.5+ inches in 24 hrs
- ◆ **HEAVY SNOW**...4 inches in 12 hrs; 6+ inches in 24 hrs
- ◆ **FLOODING**...Of any kind. Is the water level rising or falling?
- ◆ **POOR VISIBILITY**....1/2 mile or less in blowing dust, rain or snow.
- ◆ **TRAVEL PROBLEMS**...Any conditions where poor or hazardous travel conditions observed or reported.
- ◆ **STRONG OR DAMAGING WINDS**...Any winds estimated to be over 40 mph. Or winds that produce any damage. Estimate using Beaufort chart.
- ◆ **ANY DAMAGE, INJURY OR LOSS OF LIFE DUE TO WEATHER**...Be sure to include location, time and specific cause.

If you observe any of these conditions,
please call the NWS in Spokane and make a report at
(509) 244-0435

WEATHER WATCHER

National Weather Service
2601 North Rambo Road
Spokane, WA 99224-9164

TRIVIA: What month normally has the highest flows on the Spokane river through Spokane?



WEATHER WATCHER

National Weather Service Quarterly Report
Spokane, Washington

March 2000

Editor Robin Fox

Issue #1 Vol. 5

Editor's Notes

Welcome to the new century! Our spotter network continues to grow – thanks in part to the expanding interest in the internet. More and more, the Web is linking our lives to the world. You will notice more references to the internet in our publication. One exciting addition is the ability to instantly send weather reports to the NWS from home.

There have been some changes to the Emergency Managers roster during the last 6 months. Welcome aboard: Lincoln Co. - Sgt. Don Reed; Bonner Co. - Sgt. Bob Howard; Adams Co. - Leon Long.

The main purpose of this publication is to keep our users informed about our services and programs, and to recognize those who help us accomplish our mission. Weather spotters and observers, in addition to our friends in the media and emergency management, will continue to be an extremely valuable part of the NWS mission.

If there is something you would like to see in the next newsletter or have comments about a previous issue, please let us know.

National Weather Service
2601 N Rambo Road
Spokane, WA 99224-9164

(509) 244-0110
www.wrh.noaa.gov/spokane

Wild Winter Weather

The Inland Northwest experienced a dramatic mixture of weather on Sunday, January 16, 2000. The day started with a mix of winter weather including snow, sleet and freezing rain. Then during the midday, a line of thunderstorms moved across the area causing brief heavy rain and snow, small hail and damaging winds.

A storm earlier in the week had left relatively cool air over the region with surface temperatures below freezing. In addition, the strength of the storm while over the Pacific created an "offshore", easterly surface pressure gradient that continued to pull cooler surface air into the region from southern BC. Moist and relatively warmer air in the mid levels of the atmosphere streamed in from the southwest ahead of the main storm setting up a classic "overrunning" precipitation event for the area.

As the storm continued to develop, precipitation quickly spread into the region Saturday night. By sunrise Sunday, the east slopes of the Cascades had picked up between 3-6 inches of snow, while the remainder of eastern Washington received between 1-3 inches. North Idaho generally saw an inch or less. In the Spokane/Coer d'Alene area, temperatures a few thousand feet above the ground rose to just above freezing. As a result, the snow falling from higher levels changed to rain. With temperatures closer to the ground below freezing, freezing rain and sleet developed. As the morning wore on, the warm air aloft spread into north Idaho, changing the snow to freezing rain and sleet. Fortunately for travelers, enough warm air filtered into the area by mid morning so that the sleet and freezing rain turned to just rain. Further north from Omak to Bonners Ferry, most of the precipitation remained as snow.

Early Sunday morning, an upper wave moved onshore over western Oregon. This feature intensified as it moved inland and over the Cascades, while a line of convection developed along its leading edge. The convection moved into eastern Washington between 8 and 11 AM, producing thunderstorms with heavy rain, snow, hail, and damaging wind gusts to 50 mph or more. These thunderstorms maintained their strength as they moved through north Idaho. Dangerous traveling conditions developed, and ski areas across the Inland Northwest had to close.

Once the upper level wave pushed into Montana late Sunday, drier air spread into the region. This ended the precipitation. However windy conditions persisted across much of the area until around midnight. ®



Colville National Forest, Pend Oreille County

ON THE INSIDE
the Top storms of the
Century, Award Winner,
Winter Review and
much more

Spotters, We WANT to hear from you!!

Weather spotters for the NWS Spokane area now have an **Internet Connection** to forecasters in the Spokane office. Spotters can enter their observation data on the internet. Just go to the "Spotter Program" section of our internet home page. Then select the "Reports and Observations Center" link and fill out the observation form. Your observation data will reach the NWS Spokane's forecast desk within one minute. The observation form may not cover every type of weather situation so you can be more descriptive in the "Comments" box if necessary. The Observations page will also display current observations that other spotters have entered throughout the day. Also available is a comprehensive "Observation Guide" to help you explain the weather in your area. Give it a try!

Do you, or someone you know want to join the weather spotter network? Then fill out the new and improved "Spotter Signup" form in the "Spotter Program" section of our internet home page. Just go to <http://www.wrh.noaa.gov/spokane/spotters.htm> and select the "Spotter Signup" link. Fill out the boxes as completely as possible and we will get back to you with your official spotter number. Please join our spotter family. ®

Late Winter Hydrologic Summary

This winter has turned out to be rather quiet water-wise across the region. Mild winter temperatures kept most rivers ice free. The lack of a deep low-elevation snowpack and no heavy rain allowed most rivers and streams to remain below flood levels. Minor small stream flooding was observed in early February in the Palouse, but it was limited to farmlands and several road closures.

As we turn our attention to the mountain snowpack, we see remarkably a "normal" snowpack at the higher elevations as of March 1st. Early spring runoff forecasts from the Northwest River Forecast Center indicate that most rivers will crest below flood levels. Of course, some flooding is still possible if the right conditions develop, mainly a rapid snow melt combined with heavy rainfall. The flood potential for this spring would be characterized as Normal.

Several changes have been made to the Hydrology section of the web page <http://www.wrh.noaa.gov/spokane/hydro.htm>. On this page you will be able to browse the latest river, precipitation, and snow data, as well as the latest river and water supply forecasts. ®

Top Cooperative Observer Award to Harrington resident



Vicki Nadolski - NWS Western Region Director, Eugene Cronrath and John Livingston - Meteorologist In Charge Spokane NWS

Eugene Cronrath of Harrington, Washington, was presented with one of the nation's top awards for his dedication and outstanding service. He has been observing and reporting weather for more than 38 years. He received the Holm Award by the National Weather Service on February 15th, 2000. The Holm Award is one of the most prestigious cooperative observer awards; and Mr. Cronrath was one of only 25 recipients nationally during the last year. John Campanius Holm was a weather pioneer and wrote the nation's first weather records. The Holm Award was named in his honor. ®

Winter 1999/2000 Review

The Inland Northwest experienced its third consecutive mild winter. The last colder-than-normal winter was the snowy winter of 1996/97. One indicator of how mild this past winter was is the coldest observed temperatures for the season. Wenatchee's lowest temperature was only 10°F on January 19th. Spokane had its coldest reading of 9°F on January 29th. Both Wenatchee and Spokane have had several winters in the past with no low temperature of 10°F or lower, the most recent in 1991/92. But Lewiston's coldest temperature of this past winter was only 24°F on January 30th. There were only two previous winters (1933/34 and 1947/48) where there was only one low temperature less than 25°F. Lowland snowfall for the winter was below normal as well, while the mountain snowpack was at or slightly above normal by the end of February.

December continued the warm trend of November. Temperatures were as much as 7° above normal with snowfall well below normal. In general, the area still received its normal amount of precipitation with the exception being along the east slopes of the Cascades. Most of the snow fell during the first part of the month. This snow had melted off in many areas leaving most folks with a brown Christmas. A high pressure ridge for the end of the month resulted in a dry and foggy holiday week. A Pacific storm brought a snowy close to 1999.

As is often the case, the weather took a noticeable turn in January. The weather pattern changed markedly with the jet stream sagging south of the area. There weren't a lot of big snow storms, but plenty of little ones, allowing everyone to see at least some snow. Most locations had snow on the ground through the entire month. January 16th was a rather interesting day of weather. The morning started out with heavy snow and freezing rain in some locations. By midday, a vigorous front moved through the area producing a rare bout of January lightning and strong winds.

Aside from a cool spell in the middle of the month, February saw the return of mild winter weather. Most sites received above normal precipitation, with Lewiston picking up more than twice their normal amount. By the end of the month most of the basin and Palouse had melted their snow pack and spring was in the air. ®

Winter Weather Statistics

Wenatchee Airport	Dec	Jan	Feb	Total
Avg High Temp	38.8	32.3	38.3	34.5
Depart from Normal	+5.7	- 1.0	- 3.2	+0.5
Avg Low Temp	29.3	21.7	26.6	25.9
Depart from Normal	+6.8	+0.6	0.0	+2.5
Total Precip	0.64	1.71	1.13	3.48
Depart from Normal	- 0.76	+0.55	+0.37	+0.16
Total Snow	0.5	10.5	9.0	5.6
Depart from Normal	- 10.1	+1.2	+4.8	- 4.1

Lewiston Airport	Dec	Jan	Feb	Total
Avg High Temp	41.3	41.4	47.1	43.3
Depart from Normal	+1.2	+1.8	+0.5	+1.2
Avg Low Temp	33.4	30.6	34.1	32.7
Depart from Normal	+5.2	+3.5	+3.1	+3.9
Total Precip	1.14	0.89	2.23	4.26
Depart from Normal	- 0.06	- 0.39	+1.34	+0.89
Total Snow	0.3	2.6	2.7	5.6
Depart from Normal	- 4.5	- 3.1	+0.5	- 7.1

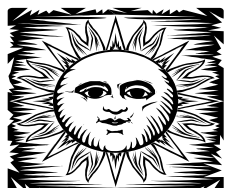
Spokane Airport	Dec	Jan	Feb	Total
Avg High Temp	36.2	32.7	39.2	36.0
Depart from Normal	+3.4	+0.6	- 0.2	+1.3
Avg Low Temp	26.9	23.1	27.7	25.9
Depart from Normal	+5.3	+2.3	+1.9	+3.2
Total Precip	2.26	1.90	1.61	5.77
Depart from Normal	- 0.18	+0.08	+0.12	+0.02
Total Snow	9.5	20.3	6.7	36.5
Depart from Normal	- 5.1	+6.1	0.0	+1.0

Trivia answer: May averages 17850 cubic ft per sec. Quite a torrent running through Spokane Falls at Riverfront Park!

Staff Changes at NWS Spokane

The Spokane National Weather office has had some staff shuffling during the fall and winter seasons. Departing our ranks were Jann Walker, Brenda Rhienecker and Daran Rife. Jann, former Admin. Assistant and co-editor of the Weather Watcher, has moved to greener pastures in Wisconsin. Brenda, a former Fire Weather Forecaster, is currently pursuing a masters degree in Education. Daran, a former General Forecaster, has accepted a job at the National Center for Atmospheric Research in Bolder, CO.

There have been several new members to the Spokane NWS team. Andy Haner, wife Heather and 10 month old son Blake, moved here from Tulsa, Oklahoma. Tired of Oklahoma severe weather, Andy now enjoys tackling the winter storms that bombard the Inland Northwest as a General Forecaster. Rose Reilly has taken the position of Admin. Assistant and has settled in quite well to our office. Rose is from Spokane and has a 4 year old daughter, Megan. Tracy and Claudia Cox have just recently arrived from Monterey, California and will take over two more forecaster positions. Tracy and Claudia are excited to make Spokane their home. ®



Top Ten Storms of the 20th Century for eastern Washington and north Idaho

10. Fall 1976 - Fall 1977 Drought over Eastern Washington and North Idaho. The economy of the region slowed due to the worst drought in 50 years. Area ski resorts were closed for much of the 76-77 ski season. Crop yields were way below normal and there were additional significant economic impacts.



9. July - October 1994 Wildfires on the East Slopes. Lightning caused wildfires consumed more than two hundred and sixty thousand acres of grass and timberland in Eastern Washington, making this the largest wild fire season in the second half of the century. The largest single event was the Tyee Creek Fire which blackened more than one-hundred and forty five thousand acres. Suppression and damage costs approached 120 million dollars. There were thirty four structures destroyed and one fatality.

8. May 31, 1997 Severe Weather Outbreak over Eastern Washington and North Idaho. Severe thunderstorms

resulted in four F1 tornados, winds to 80 mph, hail to 1½ inches and flash flooding.

7. October 16, 1991 Urban Interface Fire Storm over Eastern Washington and North Idaho. Moderate to strong wind storm combined with very dry conditions to produce an urban interface wild fire situation and reduced visibilities. Multiple fires were started in the Spokane and Coeur d'Alene area by downed power lines and other means, resulting in a situation that quickly outdistanced fire response's ability to contain it. All told, 2 lives were lost and 100 homes were damaged or destroyed.

6. November 16-21 1996 Ice Storm and Heavy Snow over Eastern Washington and North Idaho. Heavy snow dumped from two to three feet of snow around Bonners Ferry collapsing roofs of several businesses, schools and homes. On November 19, 1996, freezing rain coated everything with one inch of ice in parts of Spokane, Kootenai, Clearwater, and Idaho counties. Combined with strong winds, the ice toppled numerous trees and power lines. People were without power for weeks. Damage was estimated at over 22 million dollars and 4 fatalities were associated with the event.

5. January 1950 Blizzard over Eastern Washington and North Idaho. A significant snow storm paralyzed the region in mid January of 1950. Lower elevation snow depths ranged up to 50 inches and temperatures plunged into the minus teens and twenties. Numerous roads were closed and some weather related fatalities were reported.



4. February 8-20 1996 Floods in the Coeur d'Alene, St Joe, Palouse, and Clearwater River Basins. Warm rain falling on extensive low elevation snow caused serious flooding in the above river basins causing extensive damage in Clearwater, Shoshone, Benewah, Spokane, Whitman, Nez Perce and Kootenai counties. The communities of St Maries, Orofino, Pinehurst, Enaville, and Cataldo sustained major damage. An estimated 4000 people were stranded and 44 million dollars in damage occurred.

3. August 20-September 9 1910 Wild Fires over Eastern Washington and North Idaho. Also called "The Big Blowup" this event resulted in the deaths of 85 firefighters and civilians and consumed 3 million acres in western Montana, northern Idaho, and northeast Washington. Idaho's Edward Pulaski saved most of

from certain death by taking refuge in a mine shaft. He later went on to develop the fire-fighting tool that still bears his name today.

2. May-June 1948 Flood over Eastern Washington and North Idaho. Widespread spring snow melt flooding set record levels from the St. Joe and Pend Oreille Rivers to the Methow and Columbia Rivers.

- * Columbia River below Priest Rapids WA, Flood of Record 458.65 FT (FS 432.0 FT)
- * Lake Pend Oreille near Hope ID, Flood of Record 2071.2 FT (FS 2063.5 FT)
- * Pend Oreille River below Albeni Falls, ID Flow of Record 160000 CFS (FF 100 kCFS)
- * Methow River at Pateros WA, Flood of Record stage > 12.30 FT (FS 10.0 FT)
- * St. Joe River at Calder, ID Flood of Record 18.10 FT (FS 13.0 FT)



1. May 18, 1980 Ash Fall over Eastern Washington and North Idaho. The eruption of Mount St. Helens and the prevailing westerly winds sent a plume of ash into parts of Eastern Washington and North Idaho while blotting out the sun for several hours. The ash fell like snow, drifting as deep as two feet and crushing crops, halting transportation and causing schools and businesses to close.

Honorable Mention - December 1933 Flood for the Idaho Panhandle. Warm rain falling on melting low elevation snow caused record flooding on the Coeur d'Alene River at Coeur d'Alene, and the St. Joe River near St. Maries

Honorable Mention . August 4, 1961 Heat. This day stands out as an extremely hot day over Eastern Washington and North Idaho. Spokane set a record high of 108 degrees, Wenatchee observed 109 degrees and Lewiston's temperature soared to 115 degrees.

Honorable Mention - March 1, 1910 Stevens Pass Avalanche. One of the deadliest avalanche in U.S. history swept two trains off the tracks into a ravine, claiming 96 lives.

