

# The Weather Watcher

## of the Inland Northwest

[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



## Lightning Detection Technology

Weather forecasters closely monitor thunderstorm development. When lightning is generated, forecasters are alerted to watch for other hazardous weather like: heavy rain, hail, flash flooding, high winds, and tornadoes; all of which can occur with electrified storms.

### Lightning information is critical for:

- Weather forecasters to identify hazardous weather to issue warnings to the public.
- Air traffic controllers to re-route airline traffic around hazardous weather and to warn pilots before vulnerable takeoffs and landings at airports.
- Forestry officials to focus firefighting efforts in remote areas.
- Electric power utilities to prepare crews for dispatch to specific areas for quick repairs when thunderstorms threaten their transmission lines and generating facilities.
- Golf courses and outdoor sports facilities to warn players to seek safe shelter.
- Communications networks to re-route traffic around thunderstorms to avoid interruption.

Due to the importance of lightning data, research was conducted on lightning properties and its behavior starting in the mid-1970's. This work resulted in the development of a national lightning detection system, the U.S. National Lightning Detection Network (NLDN) which came into existence in 1989. Since that time, the NLDN has monitored the 20 to 25 million cloud-to-ground lightning strikes that occurs every year across the contiguous 48 states. This network operates 24 hours a day, 365 days a

year. The NLDN consists of over 100 remote, ground-based sensing stations located across the continental United States that instantaneously detect the electromagnetic signals given off when lightning strikes the earth's surface. These remote sensors send the raw data through a satellite-based communications network. Within seconds of a lightning strike, the information is processed on the location, time, polarity, and amplitude of each strike. This lightning information is then communicated to users across the country, including the National Weather Service.

**Lightning safety is important. Each year, about 400 children and adults in the U.S. are struck by lightning while working outside, at sports events, at the beach, hiking, and even mowing the lawn. The main point is when there is a thunderstorm nearby, stop what you're doing and find shelter at once!**

With the NLDN, meteorologists are able to use this valuable lightning data to assist in forecasting. For example, the direction, change in number of strikes, polarity, area covered and dissipation of lightning can help determine thunderstorm intensity. Lightning information is most valuable to forecasters when it is combined with other weather information from radar and satellite, to help project the real-time path of a thunderstorm.

The term "lightning prediction" has different uses. Lightning prediction can mean predicting a storm has enough energy to generate lightning over a general area, or it can mean predicting the time and place a strike is going to occur. The capabilities of predicting general lightning activity have been available for more than 10 years. By using sensing equipment to measure different weather parameters, a meteorologist is able to determine when lightning activity is likely over a large area. That's as close as technology gets to reliably predicting lightning. Mother Nature continues to closely guard her secret on when and where each strike will occur. For more information, visit <http://www.lightningsafety.noaa.gov> ☀ Robin Fox

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### Editor's Notes

*Lightning Awareness Week is June 19-25, 2005, and this is a great opportunity to educate everyone to the dangers of lightning. Please visit our website and check all the information on thunderstorms and lightning. If you have any storm pictures you would like to share, we would be happy to receive a copy of them for use in our presentations or publications.*

*If there is something you would like to see in the next newsletter or if you have comments about a past issue of the Weather Watcher, please contact Robin or Ken (509) 244-0110 extension 223.*

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

*All articles are written by the NWS staff and close contacts. A special thanks to John Livingston, Ron Miller, Charles Ross, and Bob Tobin for their contributions.*



# How Weather Works— **THUNDERSTORMS**

The Inland Northwest gets a fair share of thunderstorms throughout the year, with the late spring and summer months favored for this type of weather. Many people are fascinated by thunder and lightning, and most everyone has a story about a scary or thrilling thunderstorm encounter. As meteorologists, we have studied the ins and outs thunderstorms, how to forecast when and where they will happen and then what type of hazards they will likely produce. It can be very exciting and challenging when we go into “severe weather mode” and issue flash flood, severe thunderstorm or tornado warnings.

The American Meteorological Society defines **thunderstorm** as a local storm invariably produced by a cumulonimbus cloud and accompanied by lightning and thunder. It goes on to say that thunderstorms are usually of short duration and can produce wind gusts, heavy rain and sometimes hail. Thunderstorms are a unique phenomenon in nature because of the lightning that they produce.

There has been extensive research done on thunderstorms throughout the world. Popular culture has recognized some of these efforts through the movie “Twister” and the increasing coverage of “storm chasers”. We have various studies and conceptual models we use when diagnosing the possibilities for thunderstorms. There is a preferred scenario for long lived “supercell” thunderstorms in eastern Washington and north Idaho. There is also a preferred pattern for the “dry thunderstorms” of July and August that can lead to significant wild fire activity.



In summary, we want to salute and thank our many volunteers, friends and cooperators who help us in our quest to accurately warn about thunderstorm threats. Thanks to our spotters who provide valuable ground truth. Thanks to our friends in the media, our partners in the Emergency Alert System (EAS), who pass on our critical information quickly and accurately. And thanks to the state, county and local government officials, also our partners in the EAS, who ensure their communities are prepared and then respond. ☀ *John Livingston*

# Coop Corner



Recognizing more than 43 years of service to America, the National Oceanic and Atmospheric Administration’s (NOAA) National Weather Service has named Harrington, Washington, resident Eugene Cronrath as a recipient of the agency’s **Thomas Jefferson Award** for outstanding service in the Cooperative Weather Observer Program. The award is the agency’s most prestigious award and only 11 were awarded in 2004 to deserving cooperative weather observers in the country. His accurate and timely weather reports have played a critical role in defining the climate and rainfall patterns of Lincoln County, and supported the National Weather Service forecasting and warning programs in the Columbia Basin of Washington. Meteorologist-In-Charge John Livingston presented Mr. Cronrath his award at a May 24th ceremony at Harrington City Hall. ☀ *John Livingston*

# Drought Update

And the million dollar question is... Has the wet weather this spring been enough to turn the drought around across the region? Well that depends. For many dry land farmers that rely on spring rainfall for their crops, this wet spring has been very beneficial. Yet a couple of wet spring months cannot make up for an entire winter’s snow pack. Since the mountain snow pack feeds our rivers and streams throughout the summer, the lack of snow pack will have an impact on river levels all summer long and into next fall. We are already seeing rivers and streams at record low levels. This will have direct impacts on many water users who have water rights on area rivers and streams. There may also be fish and wildlife impacts due to the drought this summer. For information on the drought check out our web page or see the State of Washington drought page at:

<http://www.ecy.wa.gov/programs/wr/drought/2005/drthm.html> ☀ *Charles Ross*

## NWS Spokane

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# Spring in Review– Drought Relief

After a very dry winter in the Northwest, with near record-low snow packs, there was little hope of averting drought conditions. February was one of the driest on record, and planning for drought mitigation was already well underway.

**March** began on much the same note: dry and mild. The first half of the month saw little if any precipitation and every day was warmer than usual. The storm door finally opened on the 16<sup>th</sup> with a wet and windy Pacific storm. Winds gusted to 55 mph at the Spokane airport as many sites received one to two tenths of an inch of rain. The weather pattern remained stormy for the rest of the month. Most locations in extreme eastern Washington and the Idaho Panhandle wound up with near to above normal precipitation for March. However, the east slopes of the Cascades remained dry as westerly winds continued to keep them shadowed by the Cascades. By the end of the month, Wenatchee had received only 54% of their normal precipitation for the winter, with Spokane and Lewiston at 65% and 75% respectively.

**Answer: In a spark of lightning, temperatures can soar to about 50,000° F which is hotter than the Sun!**

**April** saw a continuation of the cool and unsettled weather for the first half of the month. The rainfall during this period, while frequent, was on the low side. Temperatures were well below normal on the 12<sup>th</sup> and 13<sup>th</sup> as a cold Pacific system slowly tracked across the area. Lewiston reached only 48° on the 13<sup>th</sup>, which set a record for the coldest daytime temperature ever on that date. High pressure finally built over the western U.S. in latter half of the month, bringing more spring-like weather to the area. Temperatures warmed into the 70s and even a few lower 80s by the 26<sup>th</sup>. But as is usually the case in spring, the warm spell was short lived. A mainly dry cold front dropped temperatures back into the 50s and 60s for the end of the month. The drought conditions hadn't improved much. Wenatchee now had only 50% of their normal precipitation, Spokane remained steady at 65%, and Lewiston improved slightly to 82%.

## Spring Weather Statistics

Wenatchee Airport	Mar	Apr	May	Total
Avg High Temp	57.2	62.9	72.7	64.3
Departure from Norm	+3.6	0.0	+0.7	+1.4
Avg Low Temp	36.6	41.1	50.7	42.8
Departure from Norm	+3.0	+1.1	+3.4	+2.5
Total Precip	0.21	0.05	0.77	1.03
Departure from Norm	-0.47	-0.42	+0.16	-0.73
Lewiston Airport	Mar	Apr	May	Total
Avg High Temp	58.6	63.5	71.5	64.5
Departure from Norm	+4.8	+1.9	+1.5	+2.7
Avg Low Temp	37.1	41.3	49.4	42.6
Departure from Norm	+1.5	+0.7	+2.4	+1.5
Total Precip	1.05	1.53	3.22	5.80
Departure from Norm	-0.07	+0.22	+1.66	+1.81
Spokane Airport	Mar	Apr	May	Total
Avg High Temp	51.8	58.5	66.6	59.0
Departure from Norm	+3.2	+1.0	+0.4	+1.5
Avg Low Temp	31.8	37.5	46.9	38.7
Departure from Norm	+1.4	+2.0	+4.3	+2.6
Total Precip	2.03	0.79	3.58	6.40
Departure from Norm	+0.50	-0.49	+1.98	+1.99
Total Snow	2.9	T	T	2.9
Departure from Norm	-1.1	-1.0	0.0	-2.1



**May** is typically a wet month for the Inland Northwest. In fact, it's the wettest month of year for Lewiston, and this year didn't disappoint. During most of May, several large and slow moving Pacific storms affected the Northwest. These storms often produced broad swaths of rain which moved into our area from the south. The period of the 6<sup>th</sup> through the 10<sup>th</sup> was very wet. On the 6<sup>th</sup> a southern band of rain collided with a system moving down from Canada. Widespread heavy rain fell over most of the area east of Moses Lake. Flooding was reported in the southern Idaho Panhandle. On the night of the 9<sup>th</sup>, another heavy band of rain moved up from the south, dousing the Columbia Basin with one to three inches of rain! Flooding occurred in Lincoln and Chelan counties, as well as in the southern Panhandle again. The wet weather finally came to an end, just in time for the Memorial Day weekend. Temperatures quickly jumped into the 80s for the first time on the Friday of the holiday weekend, and reached the lower 90s in some locations. The warm weather continued through Monday before temperatures returned to more normal readings.

When it was all over, Spokane had its 4<sup>th</sup> wettest May ever. Interestingly, last year was the third wettest ever. The difference was that most of the rain last year fell on one day, while this year it was spread throughout the month. For Lewiston, it was the 6<sup>th</sup> wettest May ever, while in Wenatchee it was 11<sup>th</sup> on the list of wettest May's. Even so, the rains in May did little to help the drought in the Cascades. Wenatchee had still only received 56% of its normal precipitation for the season. Spokane now had 84% of its seasonal precipitation, and Lewiston was now above normal with 103%. Now prepare for a hot and dry summer, as the long range outlook for June through September in the Inland Northwest calls for a greater percentage of above normal temperatures and seasonal precipitation. ☀ *Ron Miller*

## Remember your Summer Spotter Checklist

**Funnel Cloud/Tornado**

**Hail**—pea size or larger

**Strong Winds**—30 mph+ or damage

**Any Flooding**

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

**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.

## What to Expect for the 2005 Fire Season!

The 2005 fire season is rapidly approaching and many areas east of the Cascades have the potential for an above normal fire season. The areas that forecasters think will be most susceptible to large fires will be the east slopes of the Cascades, the Okanogan Highlands east into the Northeast Mountains and the Columbia Basin. The potential for an above normal fire season is based on many factors.

The region east of the Cascade mountains has received on average only about 80 percent of normal precipitation yearly for the past 7 years. This will stress out the live fuels and allow for the tree crowns to carry fire in July and August. The snowfall and precipitation through our normally wet winter months was well below normal the past winter. As such the large dead fuels could not absorb the precipitation that would normally fall through these months. In addition snow came off the mountains several weeks early, thus allowing grasses and shrubs to get an early start on the growing season.

The months of April and May saw abundant moisture across the region, and June is shaping up to be near normal. This will help moisten up the dead fuels until late June. However it will also yield a bumper crop of grasses and shrubs. Fuels experts around the region say that the cheat grass, and

other grasses and shrubs are already about twice as tall as normal. The warm temperatures of late June and July will allow these fuels to “cure” at the normal rate and be ready to carry fire by early July.

Now as for fire starts, forecasting summer thunderstorms in May is a risky business. However all long term indicators show a normal thunderstorm season for 2005. This results in about 15-20 days of lightning in the mountains and about 5-10 days of lightning in the basin. This will lead to a possibility for numerous fire starts. For more information, visit our fire weather web page or <http://www.nifc.gov>

☼ *Bob Tobin*

**Spotter Notes**—Spotter training is still underway. When a meeting is scheduled, a notification will be mailed to all area spotters. In addition, please check the spotter section of our web page for the latest details on training.

## Staff News

NEWS Spokane welcomes Dwight Williams as the new Electronics Systems Analyst. He replaced Robert Cummings who took a position in Reno, NV. Dwight moved from the Western Region Headquarters in Salt Lake City, UT. He and his wife, son, dog and fish are excited make Spokane their home. Welcome Dwight! ☼

## The Weather Watcher

Of the Inland Northwest



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**Trivia: How hot is a bolt of lightning?**

«COUNTY» County «SPT #» «HAM»  
«COOP ID»  
«FIRST NAME» «LAST NAME» «HAM CALL»  
«2ND FIRST NAME» «2ND LAST NAME» «2ND HAM CALL»  
«AFFILIATION»  
«ADDRESS»