YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

VOL XVIII, ISSUE 3
SETPEMBER 2013

The Weather Watcher

of the Inland Northwest

www.weather.gov/Spokane

INSIDE THIS ISSUE:

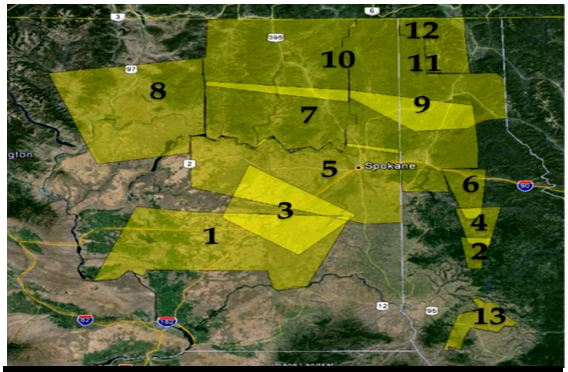
Summer in Review	2
Wenatchee Flooding	3
Winter Outlook	4
Observer Training	4
Be Prepared!	4

August Wind Storm

On August 25, 2013, a strong cluster of thunderstorms developed over Central Oregon and quickly moved into the Lower Columbia Basin, gaining strength and forming a line. These storms continued to push into the Central Columbia Basin where they expanded and appeared like a strong squall line. As they approached the Adams county line, storms stretched from near Moses Lake east to the State Route 195 corridor. A strong gust front developed out ahead of the line of storms, with gusty winds and heavy rain being the main weather threats. The storms pushed through the Columbia Basin and into the Spokane Metro Area, bringing winds of 62mph to the NWS Office and 61mph to Fairchild AFB. Winds to the west at Spring Canyon RAWS (3 miles SE of Coulee Dam) weather station indicated gusts up to 65mph! The storms continued up through the northern mountains of Washington and the Idaho Panhandle before exiting into British Columbia.

The outflow of wind and dust near Ritzville.

After the storms passed, wind damage reports started coming into the NWS Office of trees down from Coulee Dam to Spokane and power outages in Colville and Elmer City. One fatality and one injury were recorded from a falling tree at a campground in Pend Orielle County. While hail was never much of a threat with the main line of storms, isolated thunderstorms in the Central Idaho Panhandle did produce severe hail during about the same time. The gust front was strong enough to pick up a wall of dust that led to reduced visibilities in the Ritzville area. We have collected many impressive storm photos from around the region. Thanks spotters for sharing your reports and images. ☼ *Ryan Fliehman*



Map of the severe warnings issued on August 25th.

2013 Jefferson Cooperative Observer Award

Recognizing 40+ years of service to America, the NWS has named Ritzville, WA resident Greg Galbreath and the Galbreath Family, the 2013 recipients of the agency's Thomas Jefferson Award for outstanding service in the Cooperative Weather Observer Program. It is the program's most prestigious award and the only presented in the western United States.

The Galbreath Family has deep roots in Ritzville, and has been instrumental in collecting and disseminating weather reports since Ritzville's incorporation in 1890. A relative of the Galbreaths began collecting and publishing the first known weather records in Ritzville in 1891. The weather station in Ritzville was established in 1899 by Greg's grandfather, Maynard, and the duties have passed through the family, for 4 generations. Congratulations Galbreath family! ☼ *Mark Turner*

Seated: Gary & Alma Galbreath, Standing: Greg Galbreath, Congressman Richard Hastings, Ronna & Hallie Galbreath

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

Editor's Notes

Not only is September the start of autumn and the end of summer weather, it's also NOAA Weather Radio month and National Preparedness Month.

Emergencies can come in all shapes and sizes from fires and power outages, to major winter storms and flooding. Being prepared for an emergency is the key. Understand your risks where you live and know how to receive the alerts and warnings, like on a NOAA Weather Radio.

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

This newsletter and past issues are available online on weather.gov/Spokane.

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 special thanks to Ryan Fliehman, Mark Turner, Ron Miller, Katherine Rowden, Ellie Kelch and Andy Brown for their contributions.

Summer in Review

This was a summer that couldn't quite make up its mind. June was mild but wet, July was hot and bone-dry, and then August turned mild and wet again. So overall, was it a hot summer? The average temperature over the 3 month period was certainly above normal - Spokane: 69.4 (tied for 11th all-time), Lewiston: 74.4 (tied for 9th all-time), and Wenatchee: 74.0 (tied for 10th all-time).

The first half of **June** 2013 was rather quiet, weather-wise. Temperatures were near normal with breezy days. A cold front brought heavy rain and much cooler weather to the region on the 18th. Ephrata set a record with 0.63" of rain, while Kellogg had 1.00". On the 19th, Pullman only reached a high of 52°, a record for the day, while Bonners Ferry picked up 1.84" of rain and Lewiston had 1" of rain, both of which were records. Things didn't improve much the next day. A number of locations set records for cold high temperatures, including Wilbur and Potlatch with 50° and Bayview at 49°. The high of 50° in Spokane was the coldest day ever so late. After this, temperatures gradually warmed for the rest of the month. Omak had 0.96" of rain on the 24th, a record for the day.

Summer temperatures actually arrived a few days early this year. We often say that summer doesn't start until the 4th of **July**, but this year temperatures had their hottest readings of the summer on the 1st of July. That, coupled with the humidity, made for a few uncomfortable days. Our office issued heat advisories for this unusual combination. The high humidity also kept our nighttime lows very mild, compounding the heat affects. A number of records were broken on the 1st, including a high of 107° at both Lewiston and Moses Lake, along with 105° at Ephrata and Lacrosse. The heat and humidity also brought wet thunderstorms. A few of these storms caused flash flooding to the western suburbs of Wenatchee, which were possibly exacerbated by the burn scars of 2012. After this event, the weather took a marked turn to dry and breezy. And we're talking really dry. Humidity values dropped into the single digits on a daily basis. This, coupled with the winds, prompted the issuance of a number of Red Flag warnings for the Cascade areas. Thunderstorms on the 16th and 17th brought hail to the area, including golf ball-sized hail near Wilbur and 1" hail on the Waterville Plateau. The accompanying lightning ignited some wildfires as well. For the month of July, many locations received barely a trace of rainfall.

But once again, the weather pattern changed. And if July was one of the driest months ever, **August** was just the opposite. The humid conditions of late June returned on a number of events. The Wenatchee airport measured 1.91" of rain, making it the 2nd wettest August since it opened in 1959. Over half of this fell on the first day of the month when 1.09" fell in one hour, resulting in urban flooding in the area. As the storm moved over the region on the 2nd, Spokane had a high of only 61° with over a half inch of rain. Three days later, more heavy rain caused water, mud, rocks, and tree limbs to flow down Number 1 Canyon outside of Wenatchee. Another round of heavy rain and mudslides struck between the 9th and 11th. Number 2 Canyon road was closed due to a debris flow. By the end of the month, nocturnal thunderstorm events were becoming almost commonplace. A line of thunderstorms on the evening of the 25th brought widespread damaging winds to the region. Gusts up to 65 mph were measured west of Spokane, with numerous reports of trees and power lines down. On the 29th, a strong thunderstorm brought damaging winds to Okanogan. ☼ *Ron Miller*

Summer Weather Statistics

Wenatchee Water Plant	Jun	Jul	Aug	Total
Avg High Temp	78.3	92.8	87.3	86.1
Departure from Norm	-1.5	+4.6	-0.3	+0.9
Avg Low Temp	56.8	64.9	63.3	61.7
Departure from Norm	+1.2	+3.4	+2.8	+2.5
Total Precip	0.86	0.01	0.59	1.46
Departure from Norm	+0.20	-0.33	+0.40	+0.27
Total Snowfall	0.0	0.0	0.0	0.0
Departure from Norm	0.0	0.0	0.0	0.0
Lewiston Airport	**Jun**	**Jul**	**Aug**	**Total**
Avg High Temp	80.2	95.4	92.3	89.3
Departure from Norm	+1.7	+6.1	+3.5	+3.8
Avg Low Temp	54.3	61.8	62.1	59.4
Departure from Norm	+0.9	+2.2	+2.9	+2.0
Total Precip	1.93	0.09	0.50	2.52
Departure from Norm	+0.69	-0.57	-0.19	-0.07
Total Snowfall	0.0	0.0	0.0	0.0
Departure from Norm	0.0	0.0	0.0	0.0
Spokane Airport	**Jun**	**Jul**	**Aug**	**Total**
Avg High Temp	72.7	88.2	85.0	82.0
Departure from Norm	-1.1	+4.9	+2.1	+2.0
Avg Low Temp	50.7	59.7	59.4	56.6
Departure from Norm	+0.3	+3.4	+3.6	+2.4
Total Precip	1.86	T	0.68	2.54
Departure from Norm	+0.61	-0.64	+0.09	+0.06
Total snowfall	0.0	0.0	0.0	0.0
Departure from Norm	0.0	0.0	0.0	0.0

Flash Flooding near Wenatchee

A debris flow took off the corner of the barn on Colockum Road

Answer: 90 Degree Days in 2013!
Spokane: 23 (average 17), Lewiston: 56 (average 39),
Wenatchee: 39 (average 32)

As mentioned in our last newsletter, the wildfires that burned through central Washington in 2012 and again this summer have increased the risk for damaging flash flooding and debris flows. Several different thunderstorms this summer have wreaked damage on homes and properties beneath several of the burn scars in Chelan County: No 1 and No 2 Canyons above Wenatchee, USFS trails in Tronsen Creek and Devil's Gulch, Dry Gulch and Colockum Road have all seen some level of flooding this summer.

While flash floods and debris flows were coming down from the 2012 burn scars, two new wildfires were burning to the southeast of Wenatchee; the Colockum-Tarps and Mile Post 10 Fires. These fires scorched the hills, burning up all the grasses and sage, as well as blackening the trees in the bottom of the drainages. On the evening of August 11th, the final wave of several days of thunderstorms in the area set up over the fresh burn scar in the Colockum & Dry Gulch drainages. Initial rough estimates indicate that as much as 2 inches of rain fell in 2 hours.

The result was a massive debris flow out of Robinson Canyon, one of the side canyons in Colockum Creek. The damage showed the path of the debris flow. How it funneled down stream, deposited thousands of tons of rock around a house at the mouth of Robinson Canyon, peeled the pavement off Colockum Road, damaged the Kingsbury Road Bridge, and eventually overtopped the Tarpiscan Road bridge, while damaging homes, property and vehicles below. Additionally, the Mile Post 10 burn scar just to the north produced a flash flood in Dry Gulch that overtopped and washed away a portion of the Malaga-Alcoa Highway. Although some residents in the area suffered devastating property damage, fortunately no lives were lost.

It can take several years before the vegetation recovers enough in the burned areas to reduce the flash flood risk to pre-fire levels. If you live in or below any burn scars, educate yourself on the risks and monitor NWS forecasts, watches, and warnings. Be prepared for an emergency if one should arise. Below are some useful web pages on flash flooding & the recovery efforts in this area, to help you prepare and be aware. ☼

Katherine Rowden

Rocks & boulders on the Colockum Creek – Tarpiscan Rd near Wenatchee, WA.

Vehicles, rocks, and debris that were moved and re-deposited below Tarpiscan Road near Wenatchee, WA.

National Weather Service Flash Flood Resources	http://dev.wrh.noaa.gov/otx/DSS/wenatchee_complex/wenatchee_complex.php?topic=threat
Inter-agency Central Washington Fire Recovery	http://centralwashingtonfirerecovery.info/
USGS Post-Fire Flash Flood & Debris Flows	http://landslides.usgs.gov/research/wildfire/

Remember your Autumn Spotter Checklist

First Snow of the Season!
Snow: 2"+ valleys & 4"+ mountains
Hail: pea size or larger
Strong Winds: 30mph+ or damage
Reduced Visibility: under a mile due to rain, dust...
Heavy Rain: Showery: 1/2" + in 1 hr Steady Rain: 1"+ in 12 hrs or 1.5"+ in 24 hrs
Any Flooding
Any **Mixed Precipitation**!
Travel Problems or Any Damage: due to severe or hazardous weather.

Winter Outlook

According the latest NWS Climate Prediction Center seasonal forecast, the three month outlook for December through February shows an equal chance of above, near or below normal temperatures and precipitation. In other words, there is not a strong signal on what type of winter we can expect since the atmospheric and oceanic conditions remain in a neutral phase. Given current trends seen this year, it may be appropriate to lean toward more normal winter conditions for the Inland Northwest. For more long range or seasonal outlook information, see http://www.cpc.ncep.noaa.gov ☼

CoCoRaHS Winter Webinar

Please save the date. On **Thursday, Oct. 17th, 6-7pm.**, NWS Spokane will host a Winter Precipitation Webinar for all the CoCoRaHS observers in the Inland NW. We will cover useful tips on measuring snow and winter precipitation. Details will be emailed to all observers. ☼ *Robin Fox & Ellie Kelch*

Spotter Training

After a busy spring spotter training season, we look to autumn to plan additional training sessions. Our goal is to cover winter weather and hazards to our region. We will post our scheduled training sessions on the NWS Spokane web page and email messages to area spotters. So stay tuned! ☼ *Andy Brown & Robin Fox*

Be Prepared!

Make sure you and your family are prepared for an emergency, whether it be flash flooding, wild fires, winter storms or power outages. Here is a simple list of what you can do to prepare for an emergency:

- Prepare a **Disaster Supply Kit** with 3 days of food and water.
- Create a **Family Emergency Plan**, so you know to communicate to others.
- Obtain a **NOAA Weather Radio**.

Watch : Conditions are favorable for severe or hazardous weather around the watch area.
CAUTION—Watch the Sky!

Warning : Severe or hazardous weather is likely or is occurring in the warned area.
DANGER—ACT NOW!

The Weather Watcher
Of the Inland Northwest

National Weather Service
2601 N Rambo Rd
Spokane, WA 99224
(509)-244-0110

Trivia: How many 90 degree days did we see this year across the Inland NW?