YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

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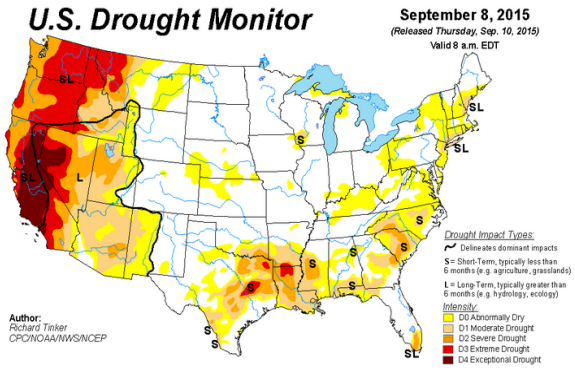
The Weather Watcher

of the Inland Northwest

www.weather.gov/Spokane

It's still Dry!



Despite the cooler and damper conditions early this September, the Inland Northwest still remains in a drought. The lack of any appreciable precipitation for much of the summer took its toll on the region. On September 8, 2015, the U.S. Drought Monitor had the Inland Northwest under an extreme drought. This extreme drought area stretched from the Canadian border south across eastern Oregon into California. This summer heat and precipitation deficit exasperated the fire season and lead to a record number of wild fires across the West. The seasonal drought outlook does not look promising. With the onset of a strong El Nino, drought conditions are forecast to persist or possibly intensify through the end of the autumn season. So despite the return of the fall precipitation, much more rain (and snow) is needed for our dryness levels to improve and any relief to be felt. ☼ *Katherine Rowden & Robin Fox*

Twisp River Fire near Wenatchee—August 21, 2015, courtesy Wenatchee World

What's up for this Winter?

Hey, so what's winter going to be like? It's one of the most asked questions this time of the year. So let's try to explain.

A strong El Nino is forecast for this winter; in fact possibly the strongest one on record. This ocean/atmospheric phenomena, derived from warming of the ocean waters in the central Pacific, often brings warmer and somewhat drier weather to the Inland Northwest. This is because the jet stream splits and the southern branch becomes stronger and more active south across California to Texas, thus leaving less storms impacting the Inland Northwest.

NOAA's Climate Prediction Center is reflecting this idea and indicating a better chance of above normal temperatures and below normal precipitation through the 2015-2016 winter season.

We've seen strong El Nino winters before—like 1997-98, 1991-92, 1982-83, and 1976-77 to name a few. Most of these winter seasons had above normal temperatures, but with variable precipitation. In the winter of '97-98, the precipitation was close to normal; '91-92 & '76-77 were drier than normal and '82-83 was actually wetter.

An important point to remember is that every El Nino season is different. It depends on many factors, including what the initial weather pattern is when the peak of the El Nino kicks in. Typically it's in the later half of the winter. So November and December are sometimes more prone to fall and winter storms over our region.

So the take away is, despite the current strong El Nino forecast, still be prepared for winter-like conditions especially for the first half of the winter season. For more information on El Nino for the Inland Northwest, see our office blog at http://inlandnorthwestweather.blogspot.com/

☼ *Jeremy Wolf*

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Editor's Notes

After the summer heat of 2015, most are looking forward to a change of seasons. Autumn officially begins September 23 at 1:22 am.

It's also time to prepare for colder & wetter weather, not only our wardrobes and households, but for our vehicles. Despite the talk of an El Nino winter, driving into mountains and through the passes will bring plenty of winter weather. Make sure your vehicle is winter ready. Weather observers should also get their rain gauge winterized!

We are always looking for new ideas, pictures and stories for our publication. If you would like to share, please call (509) 244-0110 or email nws.spokane@noaa.gov.

This newsletter and past issues are available online on our NWS Spokane web page.

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 goes to Ron Miller, Katherine Rowden, Greg Koch, and Jeremy Wolf for their help.

ANSWER: El Nino season 1976-77! Spokane: 1.89", Sandpoint: 5.01", Wenatchee: 0.92", Lewiston: 0.98"

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Weather Warnings on the Go!

Imagine this! You're driving down the highway, humming along to your favorite tunes, when the cell phone stowed in your bag suddenly makes a strange noise. To investigate, you take the next exit and safely pull over to check the screen. Good thing you did! Your phone just alerted you to a tornado a few miles away in same county you're driving through!

Sound plausible? Well maybe, Yes. America's wireless industry is helping to build a Weather-Ready Nation through a nationwide text emergency alert system, called Wireless Emergency Alerts (WEA), which will warn you when weather threatens. In fact, NWS Spokane activated the WEA twice this summer for Dust Storm warnings in the Columbia Basin. If you were driving across I-90 at that time, your phone probably alerted you on the gusty winds and blowing dust. ☼ *Greg Koch*

What are WEA messages?
Wireless Emergency Alerts (WEA) are emergency messages sent by authorized government alerting authorities through your mobile carrier. Government partners include local and state public safety agencies, FEMA, the FCC, the Department of Homeland Security, and the National Weather Service.

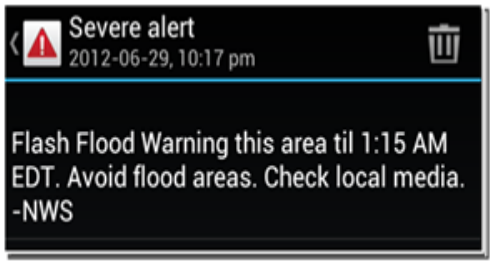
Why is this important to me?
Alerts received at the right time can help keep you safe during an emergency. With WEA, alerts can be sent to your mobile device when you may be in harm's way, without need to download an app or subscribe to a service.

What types of alerts will I receive?
— Extreme weather warnings
— Local emergencies requiring evacuation/immediate action, like a wildfire
— AMBER Alerts
— Presidential Alerts during a national emergency

What types of WEA messages will the National Weather Service send?

The more typical ones from NWS Spokane will be Tornado, Flash Flood Warnings, Dust Storm Warnings and Extreme Wind Warnings.

For more information on the Wireless Emergency Alerts & being weather ready, please visit http://www.nws.noaa.gov/com/



Blowing Dust—May 2015

Summer Weather Statistics

Wenatchee Water Plant	Jun	Jul	Aug	Total
Avg High Temp	88.8	91.8	89.3	90.0
Departure from Norm	+9.0	+3.2	+1.7	+4.6
Avg Low Temp	63.1	65.5	62.8	63.8
Departure from Norm	+7.5	+4.0	+2.3	+5.6
Total Precip	0.03	0.08	0.01	0.12
Departure from Norm	-0.63	-0.26	-0.18	-1.07
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	89.8	93.2	91.1	91.4
Departure from Norm	+11.3	+2.9	+2.3	+5.5
Avg Low Temp	60.5	64.2	61.8	62.2
Departure from Norm	+7.1	+4.6	+2.6	+4.8
Total Precip	1.22	0.02	0.01	1.25
Departure from Norm	-0.02	-0.64	-0.68	-1.34
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	84.8	87.1	85.6	85.8
Departure from Norm	+11.0	+3.8	+2.7	+5.8
Avg Low Temp	58.0	61.3	59.3	59.5
Departure from Norm	+7.6	+5.0	+3.5	+5.4
Total Precip	0.07	0.19	0.18	0.44
Departure from Norm	-1.18	-0.45	-0.41	-2.04
Total snowfall	0.0	0.0	0.0	0.0
Departure from Norm	0.0	0.0	0.0	0.0

2015—One Very, Very Hot Summer

OK, there's no other way to say it: 2015 was the hottest summer (defined as June, July, and August) ever in the Inland Northwest. In some spots, it was also the driest!

Location	Hottest Summer Rank	Driest Summer Rank
Lewiston	1st	20th
Spokane	1st	1st
Ephrata	1st	4th
Moscow	5th	3rd
Colville	1st	10th
Wenatchee	1st	5th
Winthrop	3rd	7th

The month of **June** started off innocently enough. A cold front on the 1st brought heavy rain to the region with thunderstorms producing flash flooding. Hayden, ID measured 3.25-4.75" of rainfall, while Colbert, WA picked up 2.28". Lewiston had 0.70" of rain in 30 minutes which led to significant flooding. After a few cool days behind this front, an unusually strong area of high pressure developed, bringing record hot temperatures to the area. By the 8th, everyone was in the 90s with a few in the triple-digits. The heat didn't last, and temperatures dropped back to normal mid-June readings. But there wasn't any rain either. Warm weather returned as the high pressure continued over the western US. The desert Southwest saw extremely hot temperatures, and this heat built northward into our area by the end of the month. Triple-digits were common place on the 27th and 28th. Many locations set their all-time hottest June day. Spokane hit 105°F. To put this in context, not only was this the hottest June day ever in Spokane, it was the 5th hottest day ever in Spokane history. A wild fire in the Wenatchee area burned 28 homes on the 29th. The heat abated a bit on the last few days of June as some thunderstorms tracked from Colville to Bonners Ferry, resulting in significant wind damage with numerous downed trees and power outages. When it was all over, the month of June 2015 was by far the hottest June ever, more than 10 degrees warmer than average. In fact, the readings for June this year were hotter than what we usually see in July or August. So the big question was "would this heat last all summer?"

Flash flooding in Lewiston—June 1, 2015

July quickly answered that question as above-normal temperatures persisted for the first 10 days. Showers and thunderstorms brought a short end to the heat on the 11th, bringing much needed rain to the area. An observer north of Davenport reported 1.34". Flash flooding closed Highway 195 north of Clarkston. Another round of thunderstorms brought lightning to the Canadian border region on the 20th, which started a few wild fires. Temperatures for the rest of the month were actually quite normal for this time of year. A cool and showery weather pattern came in for the 25th through the 27th. But the heat returned on the 30th with more triple-digit temperatures.

The hot weather continued into **August**. There were a few thunderstorms on the 3rd and again on the 10th, but they weren't widespread and didn't bring much if any rain. Although the lightning started a number of fires south of Lewiston. A strong low pressure system moved through the region on the 13th and 14th. Initially this low sparked a number of thunderstorms which started numerous wild fires. As the low exited, strong winds developed on the 14th which fanned the wild fire flames. Tens of thousands of acres were burned. The wind also created a significant dust storm. Following this event, temperatures were pretty close to normal for mid-August. But the smoke from all of the wild fires was the big story, reducing visibility and causing health concerns. A strong cold front from the north on the 20th and 21st brought more wind to the Okanogan Valley. A third strong storm moved through the region on the 29th, bringing the strongest winds of all. Lewiston gusted to 73 mph, which knocked down trees and power lines, while the Spokane Airport measured a gust of 49 mph. Blowing dust was again a problem. Thankfully, this storm was more moist, bringing some rain to the Cascades and northern mountains. This helped keep the fire activity in check, despite the strong winds. A secondary front the next day brought more widespread rains to the area, and significantly cooler temperatures. Many locations didn't even warm into the 70s. This cooler wetter weather continued into early September. Thus, while the summer of 2015 got an early start, it may have also come to an early end. ☼ *Ron Miller*

Blowing dust at NWS Spokane —August 21, 2015

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

Remember your Autumn Spotter Checklist

First Snow of the Season!!!

Snow:
2"+ valleys & 4"+ mountains

Tornado or **Funnel Cloud**

Hail: pea size or larger

Strong Winds:
30mph+ or damage

Reduced Visibility:
under a mile due to smoke, dust...

Heavy Rain:
Showery: 1/2" + in 1hr
Steady: 1"+ in 12hr/1.5"+ in 24hr

Any Flooding

Any **Mixed Precipitation**

Travel Problems or Damage:
due to severe/hazardous weather

Flash Floods After the Fires

Wildfires can wreak havoc on communities and forests, but many people are unaware of the dangerous flash flood hazard they leave behind.

After a fire, the soils change. Burned soils develop a waxy characteristic that repels water; it's called hydrophobic. The rain that falls onto these types of soils does not soak in and runs off quickly. The volume of runoff increases with hydrophobic soils too. The volume and speed of runoff leads to an increased risk of flash flooding.

Flash flooding is much more likely after a wildfire due to the loss of vegetation and the change of soil properties. Steeper slopes and severely burned landscapes are at the greatest risk, but every area is unique. Also flash flooding can occur in areas that may not typically flood, or where one wouldn't expect to see flooding, especially for motorists and pedestrians.

Short bursts of intense rain are the main culprit of flash flooding. On recent burns with steep terrain, all it takes is a thunderstorm producing a quarter of an inch of rain in less than 30 minutes to lead to flooding. The more intense the rain (or rain rate), the better chance of flooding, especially down the slope or stream. It may not necessarily be raining at the location of the flooding.

Debris flow near Pope Creek — August 14, 2014

It takes years for the vegetation to return and soils become less hydrophobic, allowing the risk of flooding to decrease.

Debris flows occur when debris like trees, soil and rocks gets caught up in a flash flood. Debris flows can move at over 100 mph on steep slopes! Rapid erosion during intense rain increases the chances of debris flows.

Remember as you approach flooded roads and streams, "Turn Around, Don't Drown!"

☼ *Katherine Rowden*

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
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Trivia: What is the driest winter season (Dec-Feb) on record?