

# Weather Spotter Training for the Inland Northwest



Spring 2020



National Weather Service Spokane, WA

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



Welcome to the weather spotter training for the Inland NW. Typically we offer in-person training to various counties in our area along with one virtual class. Due to the current environment, we have opted to offer all of our spring seminars in virtual form

# Agenda

- Weather Spotter Program
- Role of National Weather Service & Tools
- Weather Hazards, Safety, and How to Report
- Getting the Word Out
- Other Ways to be Involved
- Long Range Outlook

## # 1 Poll Question



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Here's our Agenda for this class.

# To our current Weather Spotters THANK YOU!



Eyes and Ears of the National Weather Service  
1,200+ Weather Spotters in the Inland NW



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First and foremost, to our current weather spotters – A big thank you. We appreciate your service, your hard work and your reports. You are the eyes and ears of the NWS. According to our records, we have over 1200 weather spotters registered across the Inland NW, although active membership is just a fraction of that.

# New to the program?

## What is a Weather Spotter?

- Weather enthusiast who volunteers time to report severe or hazardous weather
  - As needed basis
  - No weather equipment is necessary
  - Simply call, email or send a report online
  - Become the eyes and ears of the National Weather Service
- So if you are interested, stay tuned to learn more



National Weather Service Spokane



To those new to the program, weather spotters are weather enthusiasts who volunteer their time to report severe or hazardous weather. They can simply call a phone number or report online. So if you are interested, stay tuned.

# National Weather Service (NWS)

- Part of the Federal Government – Dept of Commerce
- Responsible for all weather/water Watches & Warnings
- 126 offices across the country
- Works with local agencies
- Observe & Forecast
- “Behind the Scenes”
- Decision Support
- Preparedness & Education



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More on the National Weather Service

Staffed 24/7  
Current office site since 1995

# NWS Spokane

- \* 21 Employees
- \* Meteorologists
- \* Technicians

- Duties
  - Observations -Weather Balloon
  - Forecasts
    - Aviation, Public, Fire Weather
  - Weather Watches & Warnings
  - Public Service



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Stats on NWS Spokane

# Forecast area of Responsibility

- **Quite diverse** – Eastern Washington & North Idaho
  - Spans from the northern Cascades to the MT border
  - Spans from the BC border to just north of the Tri Cities

## Main weather concerns change with the season & include:

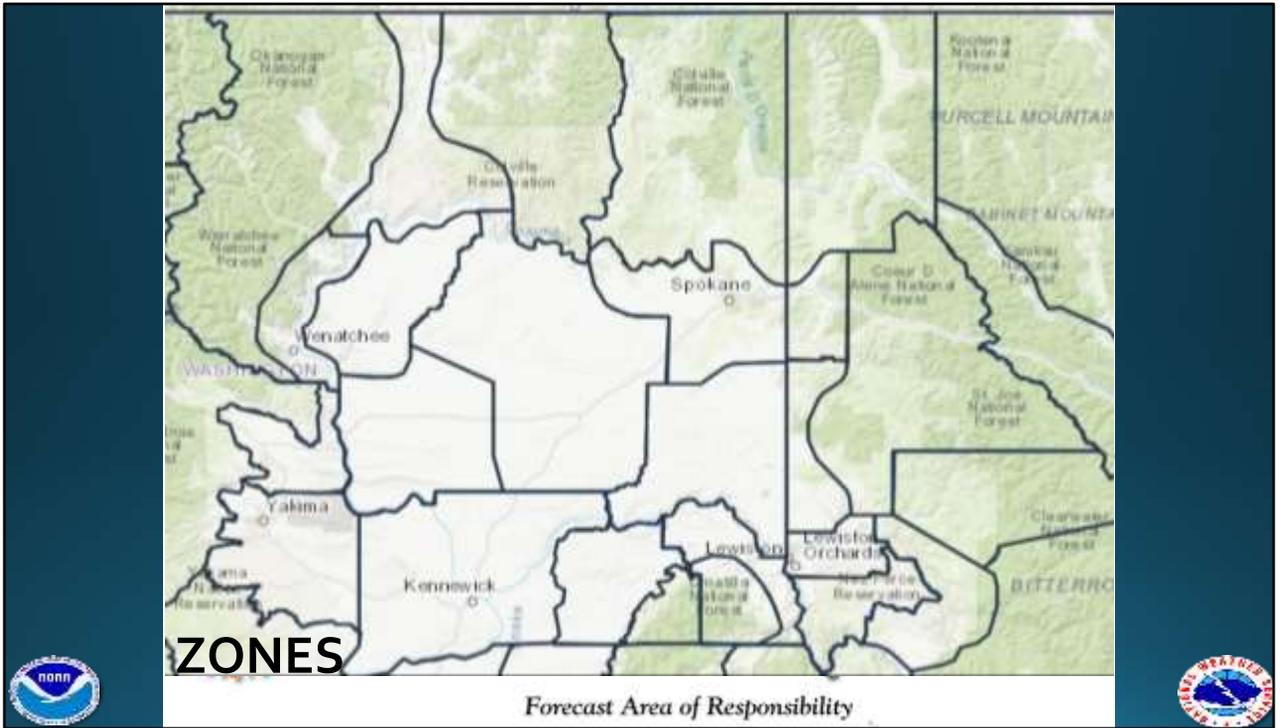
- Winter storms – snow, ice, rain and wind
- Flooding – river flooding and flash flooding
- Fire weather – wind and dryness, lightning and smoke
- Thunderstorms – hail, wind, rain and lightning



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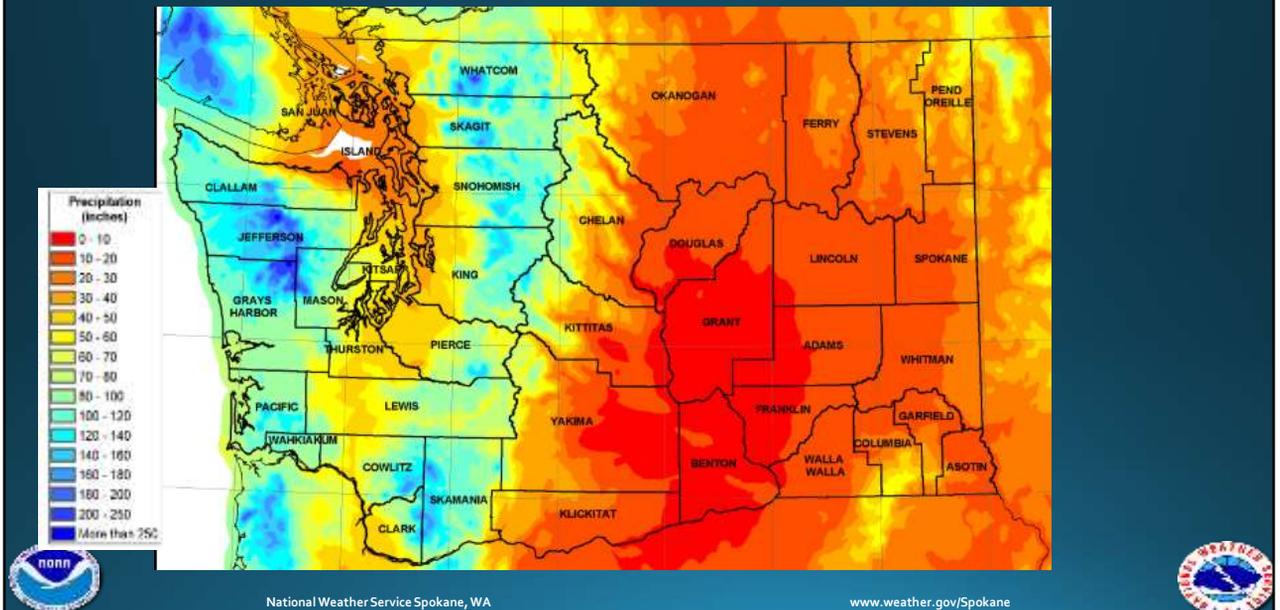


Forecast area of responsibility and main weather concerns changes with the season



Counties vs zones

# Terrain Makes All the Difference



The zones are dependent on the climate areas. Terrain makes all the difference with the weather from the west side vs. the east side of the Cascades as you can see in the average annual precipitation

# NWS Observations & Tools



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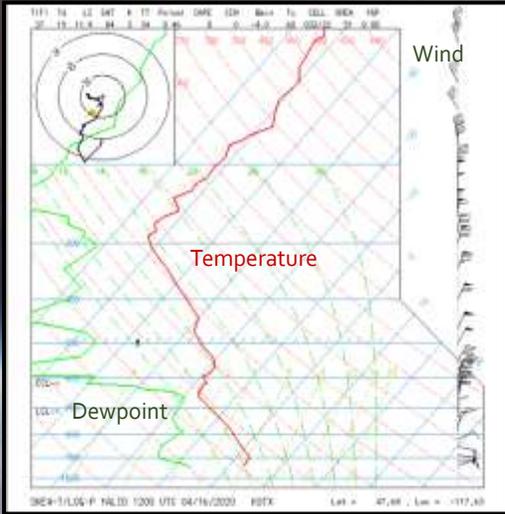


The NWS uses various tools to observe, forecast and warning on impending severe weather – including weather balloons, satellites and radar.

# Weather Balloon - Radiosonde



The NWS Spokane does launch weather balloons, and has done so for almost 80 years. It's done twice a day everyday.



- Twice a day; every day
- 92 Upper Air sites across the U.S.
- About 100,000 ft (~19 miles) high
- One hour and 45 minutes flight
- After the balloon pops, a parachute opens and it falls back to the earth
- Less than 20% are recovered and mailed back
- Radiosonde chart gives a profile of temperature, dewpoint, winds through a column of the atmosphere.

Where to find this chart online?

<http://weather.rap.ucar.edu/upper/otx.gif>

NWS Spokane web page:

Forecasts tab – Forecast models

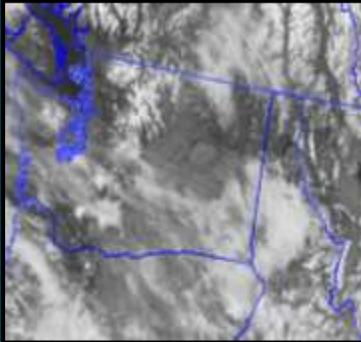


Photo courtesy of Earth to Sky Calculus

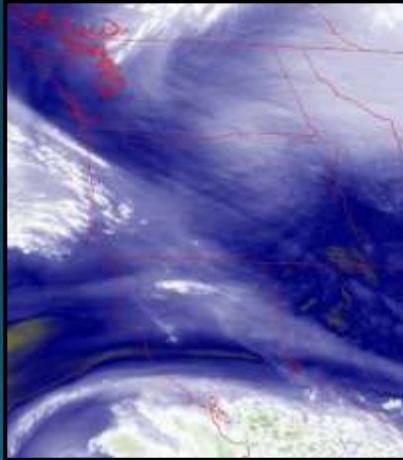


Here's more stats on radiosondes

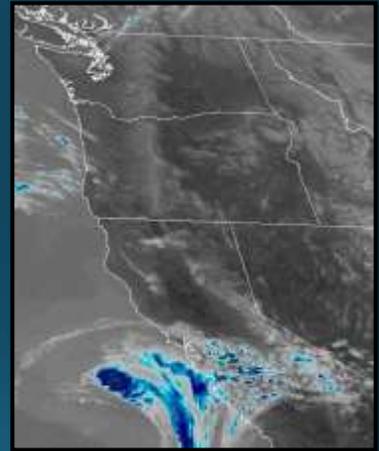
# Weather Satellites – Many Channels



Visible Image



Water Vapor Image



Infra-red Image



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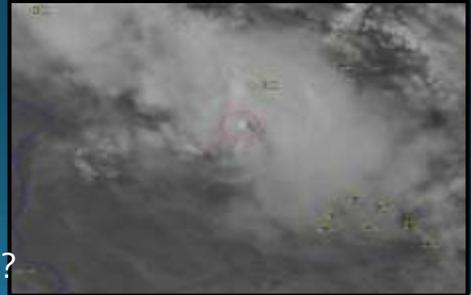
[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



Geostationary weather satellites are commonly used. These satellites orbit above the earth and take images of the atmosphere. They offer many channels – include visible, infra-red and water vapor

# Weather Satellites

- Higher resolution pictures: GOES 17
- 16 different channels
- New images every 5 minutes
- Earlier detection:
  - Thunderstorms
  - Wild fires
  - Fog



Where to find on NWS Spokane web page?  
Current conditions tab - Satellite



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Stats on satellites. GOES 17 is now GOES west, launched in 2018. It has high resolution images.

# Doppler Weather Radar

Painting of the dome



Installed in 1995 – Pedestal Replacement 2019

Size of Dish – 30 ft diameter



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159 Radars across the country

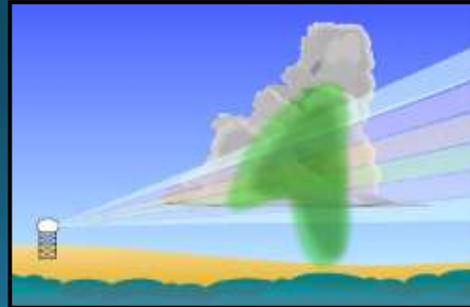
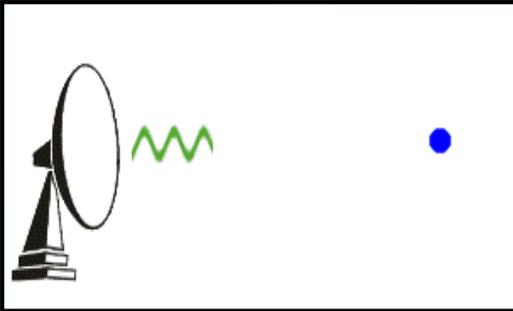
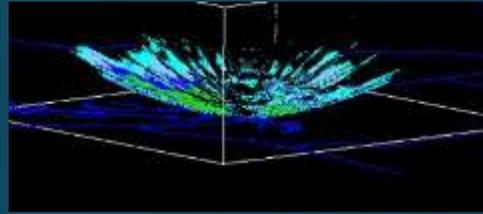
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Weather radars aid in the identification of precipitation and severe weather.

# How the Weather Radar works

- Radar sends a radio signal - pulse
- Listens for a return signal
- Rotates 360 degrees = "slice"
- Multiple slices at higher elevations
- Completes a "volume scan" 4-8 min



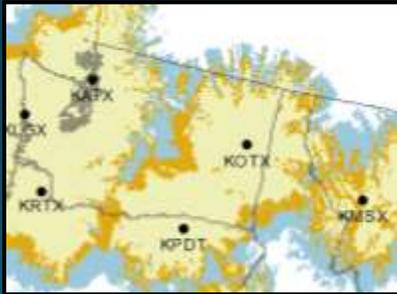
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How they work.

# Weather Radar Limitations



Beam Blockage  
Undercutting distant storms



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Limitations include beam blockage by terrain and undercutting distant storms.

# Surface Observations & Web Cams



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Automated weather sensors give frequent reports of temperature, moisture, winds, pressure and cloud cover. Many partner agencies have them as well, including DOT and Forest service. Yet they have limitations as well. A network of web cams is also very useful, especially along heavily traveled highways.

# Supercomputers & Models

High resolution models can give updated forecast data 1 to 6 hours!



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NWS has a network of supercomputers, used to ingest the various weather data and run forecast models. High resolution weather models can give new output every 1-6 hours.

# We need weather spotters! Why?

- Current radar Limitations
- Report events not seen by radar or satellite
- Fill in the “holes” not seen by observations & web cams
- Ground Truth on events
- Goal – maximize warning effectiveness and lead times

*(Coverage Below 10,000 ft)*



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Yet, despite all of the increase in technology, we still need weather spotters. Due to limitations in radar, satellites and observations, there are holes that need to be filled. Ground truth is needed since what we see on satellite or radar, may not be reaching the ground. The goal is to maximize warnings and lead times to product the public. So let's learn more....

# #2 Poll Question



National Weather Service Spokane





The graphic is a checklist for weather spotters in the Inland Northwest. It features a central white column with ten colored bars, each containing a weather hazard and its reporting criteria. The top of the graphic includes the NOAA logo, the title 'Inland Northwest Weather Spotter Checklist', and the SKYWARN logo. The bottom of the graphic includes the NOAA logo, the NWS Spokane phone number, and the website weather.gov/Spokane. The entire graphic is set against a dark blue background.

**Inland Northwest Weather Spotter Checklist**

- Tornado or Funnel Cloud:** ANY kind
- Strong Winds:** +40 mph/Damage (58mph severe)
- Hail:** +3/4" in diameter (1" severe)
- Heavy Rain:** +1/2" in 1 hr or +1" in 12 hrs
- Flooding:** ANY Kind
- Mixed Precipitation:** freezing rain or sleet
- Snow:** +2" below 3K ft (valleys) or +6" abv 3K ft (mntns)
- Poor Visibility:** 1/2 mile or less
- Travel Problems:** due to weather
- Damage, Injury or Loss of life:** ANY
- Excessive Heat:** ANY
- Excessive Cold:** ANY

**NWS Spokane: 1-800-483-4532**

weather.gov/Spokane

Here's the weather spotter checklist designed for the hazards across the Inland NW. This is included in your notes.

# How Spotters Report - Easiest Phone Call



Dial :  
**1-800-483-4532**  
Spotter ID



**What:**  
Event you  
Witnessed



**Where:**  
Location  
of event



**When:**  
Time of  
the event



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Easiest way to report by phone

# How Spotters Report – Just as easy Online Reports

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



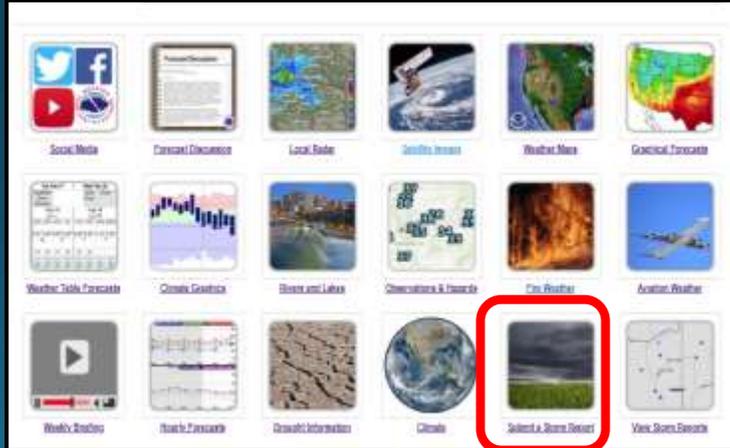
**Storm Reports**  
Alerting the NWS to local weather

Report Type -> Details -> Location -> Review and Send

Please select a report type

Back Next

[Privacy policy for weather reports](#)



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Just as easy - online

# Share weather data - Social Media

## Twitter

- @NWSSpokane
- #wawx & #idwx
- Send reports & pictures
- Monitored 24/7



## FaceBook

- NWS Spokane
- Send reports & pictures
- Monitored 24/7



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We are active on social media. A great way to share reports. Currently FB is locked out, but hope to revive it soon.

# Share weather data - mPING

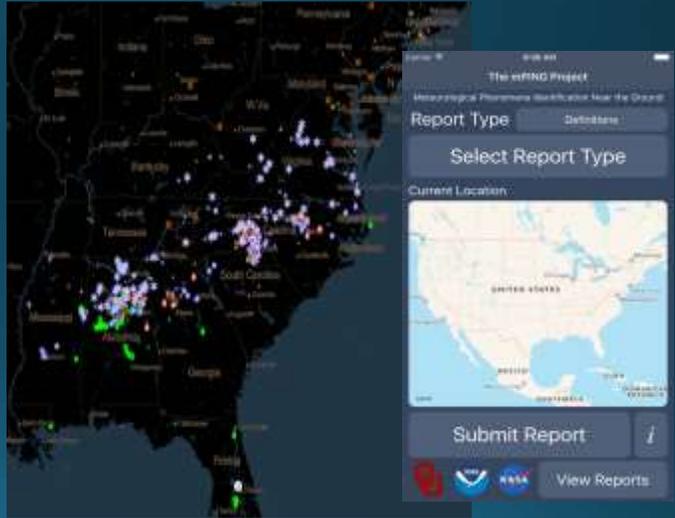
Available on iOS and Android

Reports sent to NWS

Reports are anonymous

Very easy to use

Website: <https://mping.nssl.noaa.gov>



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mPING a great way to crowd source precipitation type.

# Share weather data - Email Photos

[nws.spokane@noaa.gov](mailto:nws.spokane@noaa.gov)



If ARES/RACES Hams, relay report to your central collection point.



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Send any pictures to our office email account.

# What's in a Spotter Report

- Specifics...Tell us the story!
  - Who...What...and Where *Spotter ID & Location*
  - When the event began and/or ended
  - Estimate of wind speed and/or hail size
  - Damage and injury reports
- If unsure - report your uncertainty
- Include reports while traveling & any delayed or second hand reports



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What is in a spotter report?

# Good Spotter Report



This is Tom Smith, Spotter Spokane #25 calling from my home on the South Hill. There is currently large hail falling. I measured one stone and it's about the size of a quarter. It began about 30 minutes ago.



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Here's a good spotter report

# Good Spotter Report



This is Bob Smith, Bonner #38. I'm currently driving along Highway 95 near Sagle. I see lots of standing water on the roadway and in the ditches. It looks like a mudslide. A car slid off the road. It's pouring out. I'll email you a photo when I get back home.



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Here's another good report

# Not So Good Spotter Report



Hi there, how are you doing? Who is this? ...Well hi Steve! I'm a spotter in Ferry County. I see lightning to the north and it rained here a little bit ago. The news is saying it's much worse to the south. Are we going to get another thunderstorm? ....How long is it supposed to last? How's your evening going?



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## Ways to improve this report

- Identify self – Spotter ID
- Give Location
- Time of lightning
- Anything else on the list?



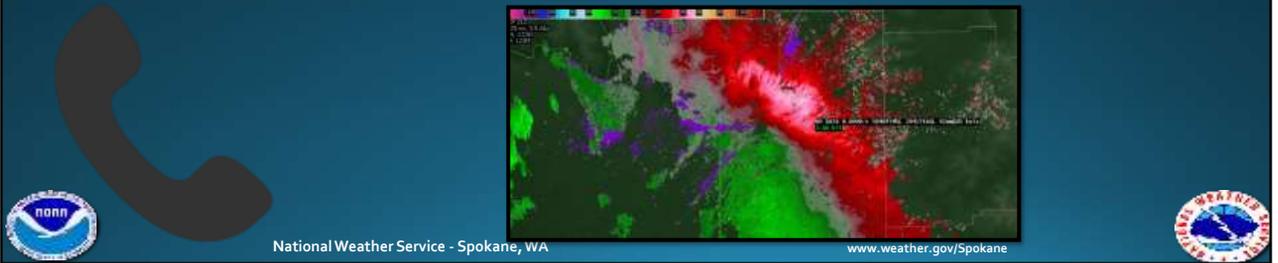
A report that needs improvement.

# Keep in Mind – We may contact you

As a registered weather spotter, you'll share your phone number with the NWS.

If we see severe or hazardous weather near your location....

We will likely try to call and get information on what you are experiencing (ground truth) based on what is seen on radar



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NWS can call weather spotters. You may see it on your caller ID.

Hello this is Steve from the National Weather Service...is this Mark? Hi Mark, we're tracking a strong storm that just passed over your home. Did you have any strong winds or hail with that storm?



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Calling a weather spotter. We plot a spotter's location on radar displays.

# Emails are Important

Besides a phone number, it's important to keep emails current.

You will likely be notified the day before/day of by email when there is a WIDESPREAD Severe Weather Risk/Thunderstorm Outbreak

We send periodic emails to alert you of the quarterly newsletter and upcoming training opportunities.



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Emails are very important. It's a good way to share data.

# Thunderstorm Outbreak All in One Day



National Weather Service Spokane

July 22, 2016



Here was a recent thunderstorm outbreak day. Severe weather reports from across the region.

# #3 Poll Question



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# Thunderstorm Hazards



## Thunderstorm Hazards

# Thunderstorms

## 3 Ingredients

- Moisture
- Instability
- Lift



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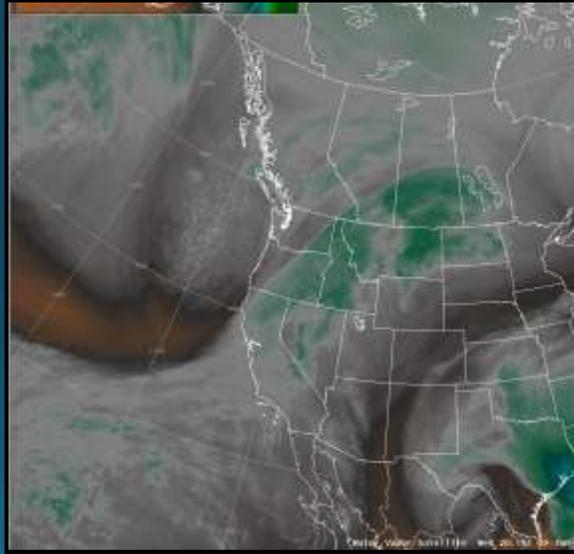
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The three ingredients for thunderstorms.

# Ingredient 1: Moisture

Most often  
our moisture  
comes from  
the Pacific



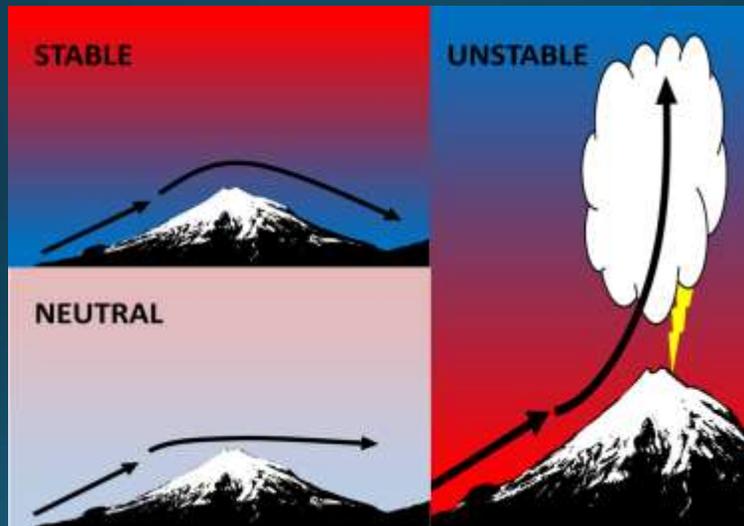
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[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



Moisture – typically come from a southerly flow.

# Ingredient 2: Instability



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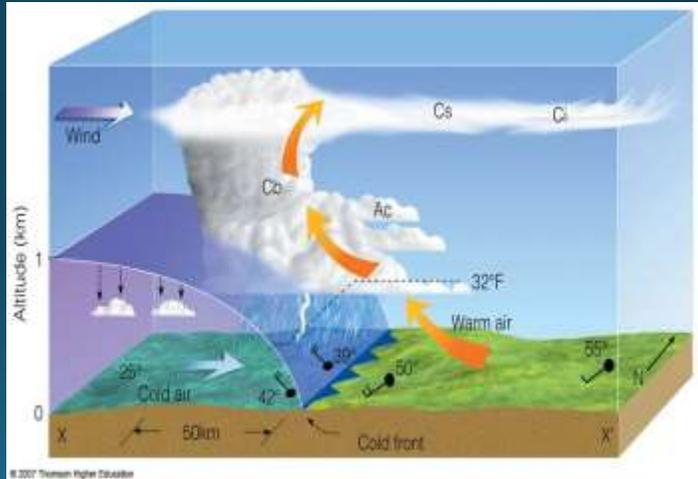


The greater the temperature difference, the greater the instability. Warm air rises and cold air sinks.

# Ingredient 3: Lift

## Lift from a Cold Front

- Colder, more dense air pushes under warmer, moist air – forms clouds
- Air converges along the boundary – forces it to rise



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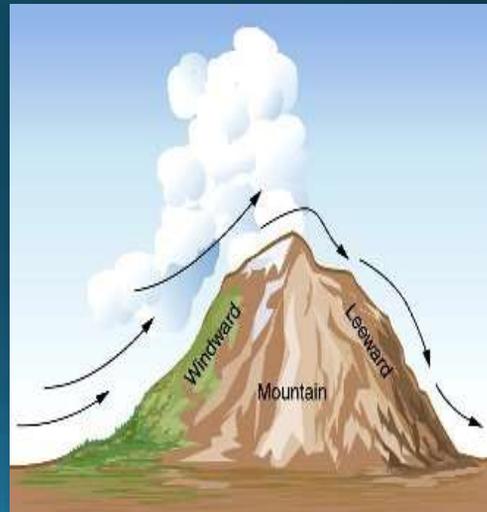


Cold fronts have a steeper and a round blunt end along the leading edge of the front, which helps push the surface air farther up and faster compared to a warm front.

# Ingredient 3: Lift

## Lift from Mountains

- Air rises on the WINDWARD side of a mountain – forming clouds
- Air descends on LEEWARD side of a mountain – drying & warming the air.
- Wind direction determines precipitation

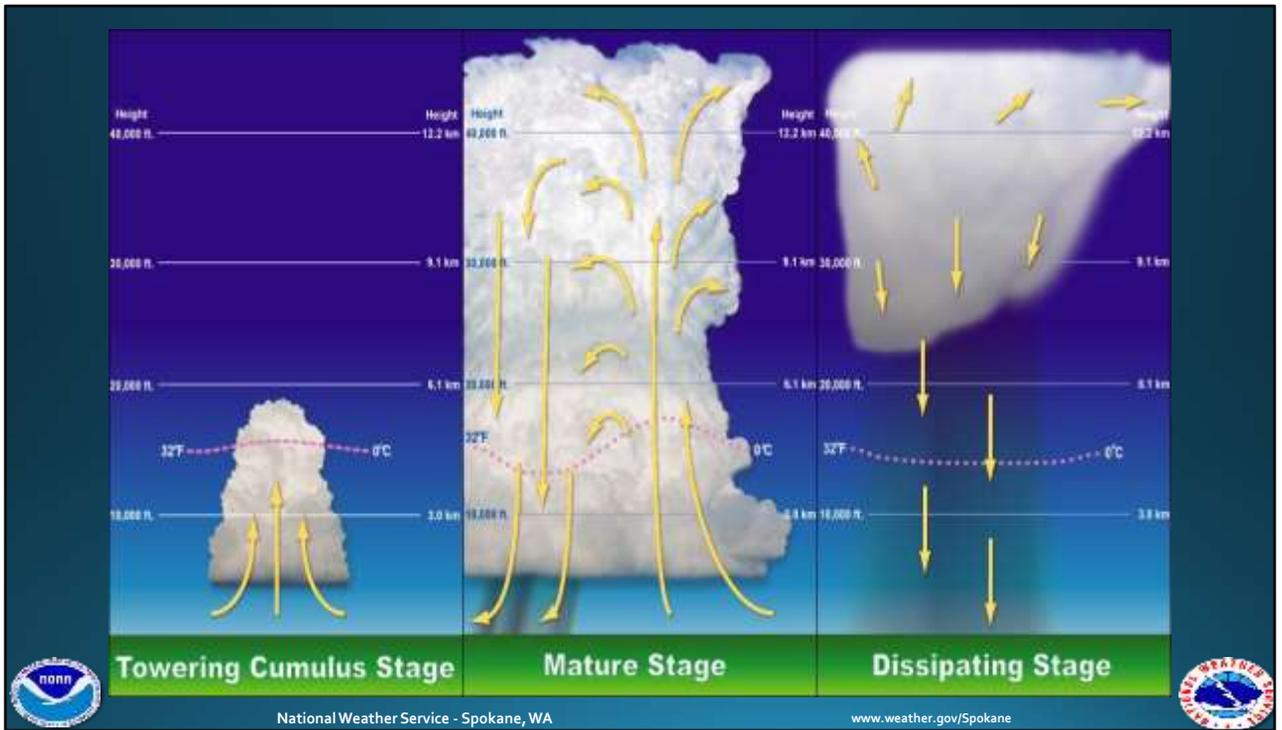


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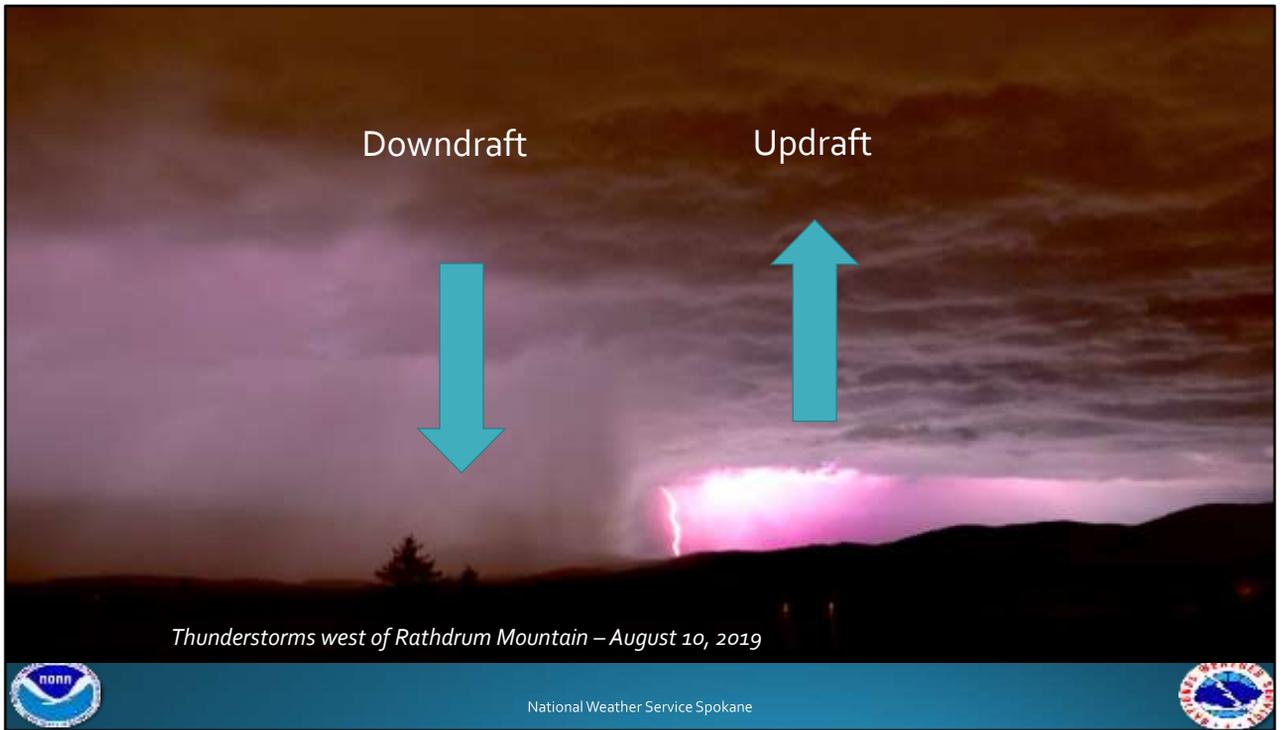
[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



Stable air being pushed up a mountain range will precipitate along the windward side, due to cooling as the air parcel expands. On the leeward side the air parcel sinks and warms due to compression. Describe the difference in precipitation across the Cascades. But with the environment is unstable, the terrain helps lift the air parcel and it will continue to rise.



The three stages in thunderstorm development



From this thunderstorm image, can you tell the difference between the updraft and downdraft?

# What is a Severe Thunderstorm?



**WIND**  
 $\geq 58$  mph



Or



**HAIL**  
 $\geq 1$ " in diameter



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What makes a thunderstorm severe? It's the hail and wind. Same standards nationwide.

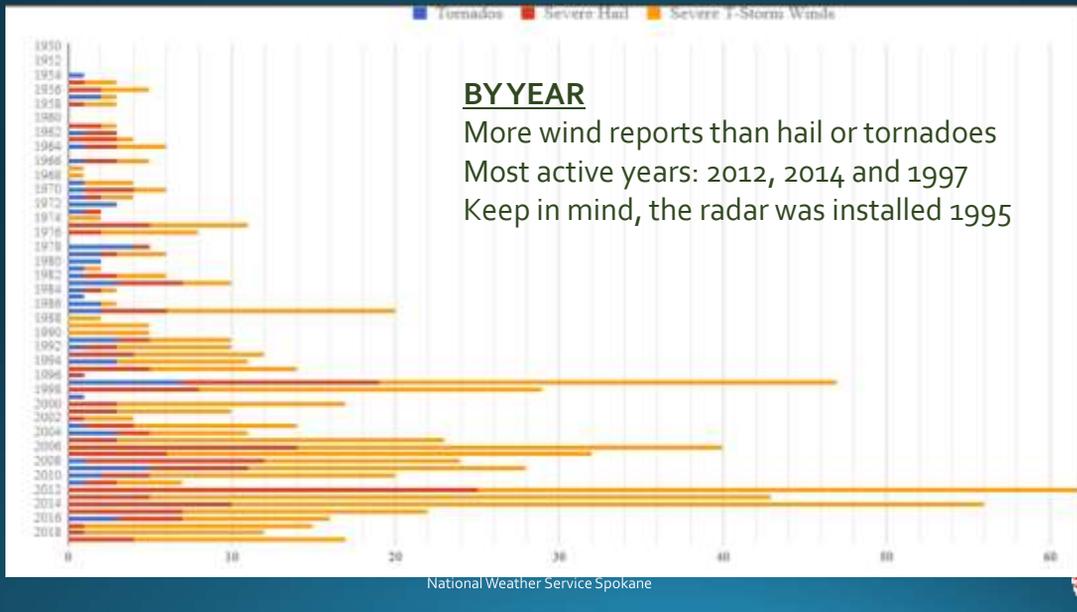
# #4 Poll Question



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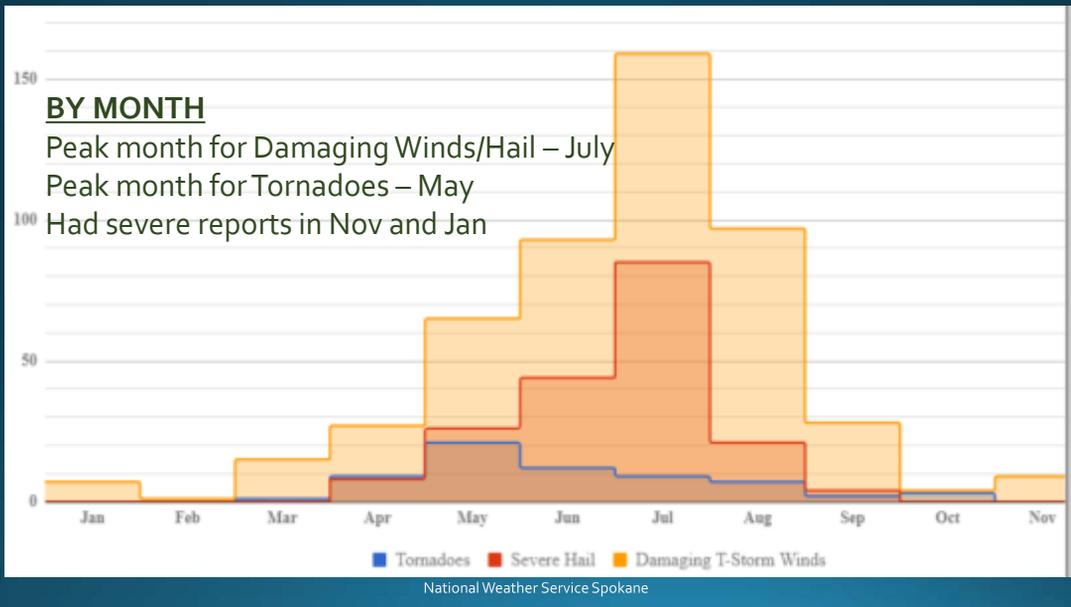


# Local Severe Weather Climatology



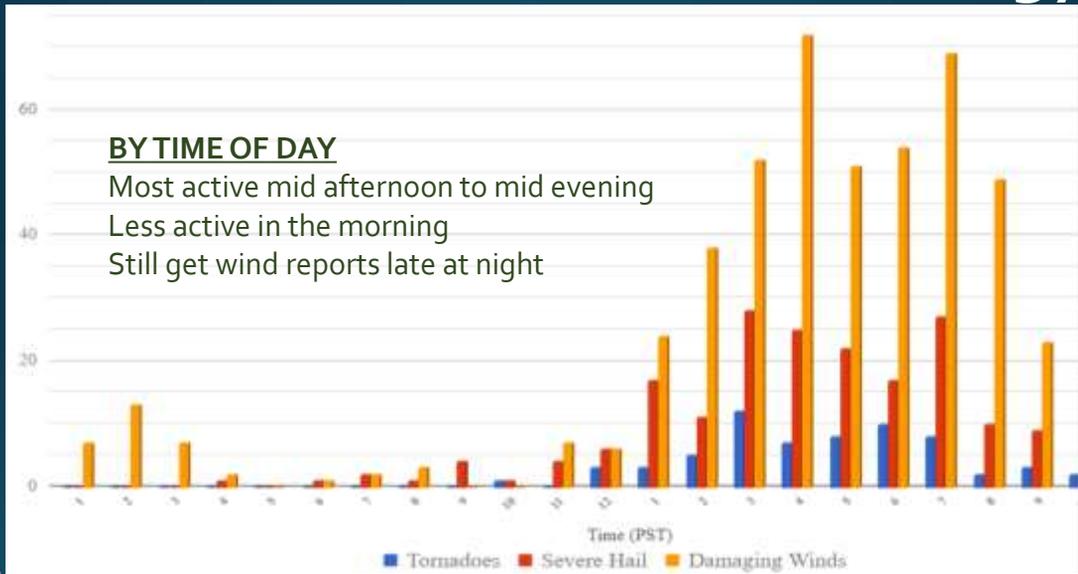
Here's a list of all the severe weather reports across the Inland NW since 1950.

# Local Severe Weather Climatology



Here's a break down of severe weather by month. Notice the trends.

# Local Severe Weather Climatology



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Here's a list of severe weather by time of day.

# Supercells....

Not your ordinary thunderstorms



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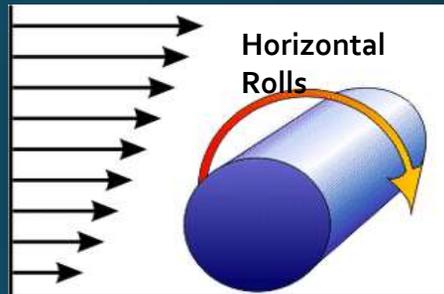
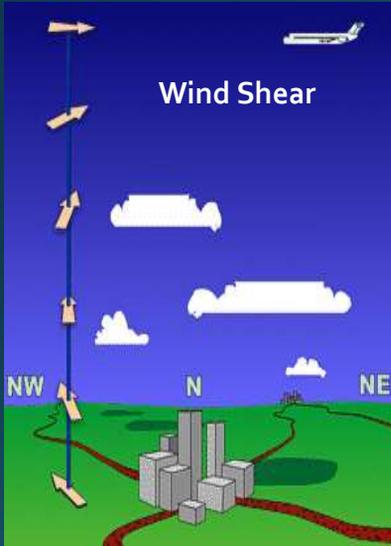
[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



Yes – we see supercells in our region. They are rotating storms.

# Supercell Thunderstorms

What makes them rotate?

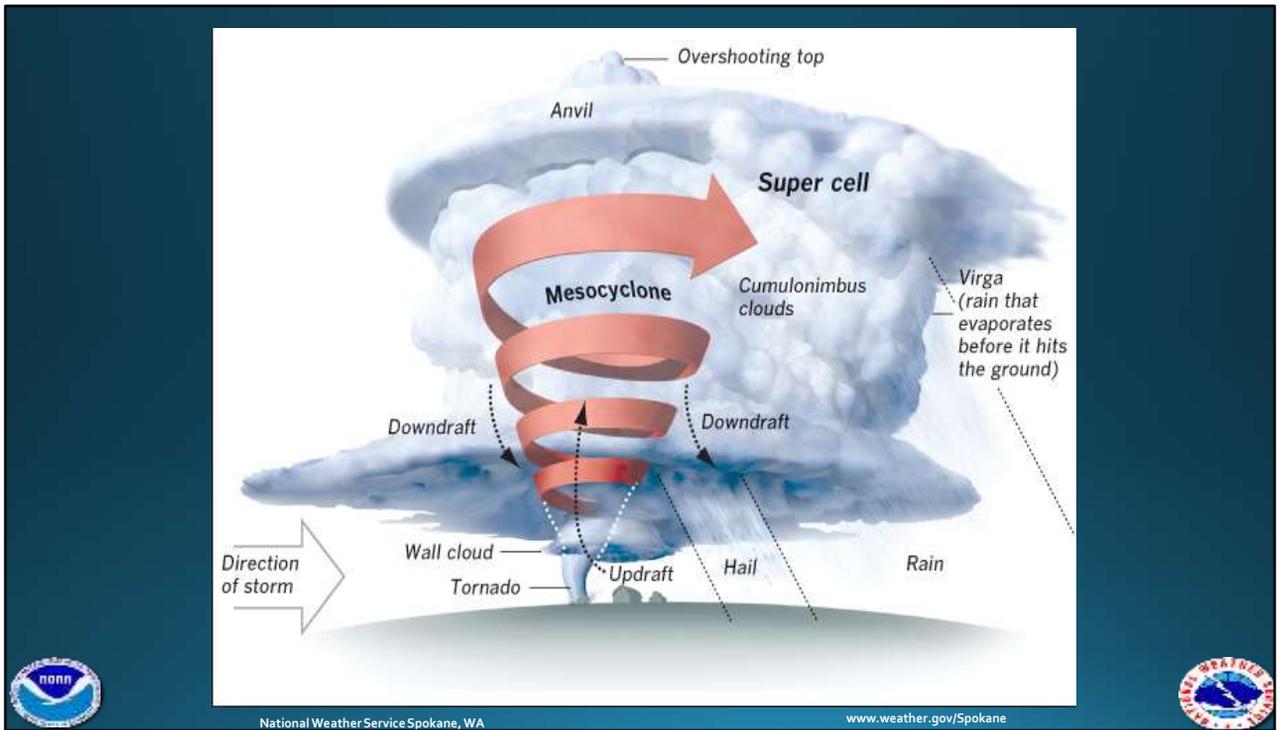


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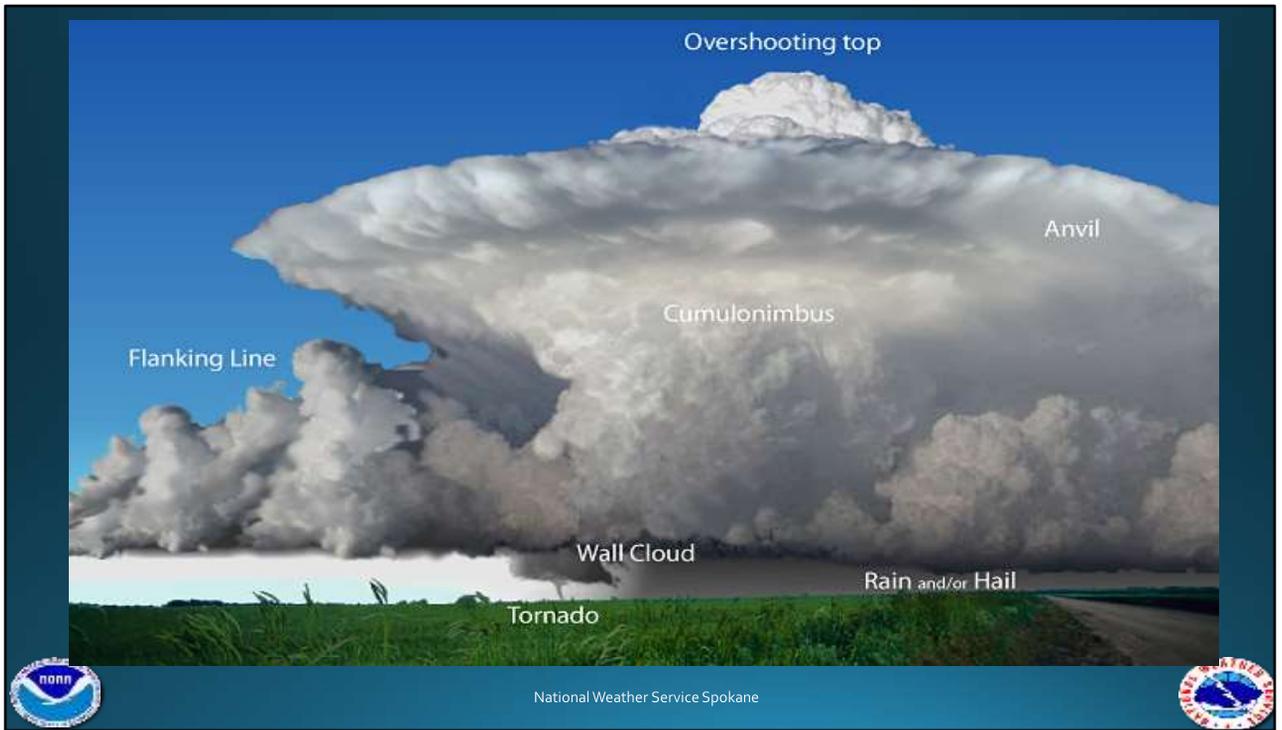
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What makes them rotate is wind shear or the change of wind with height – either speed or direction. This leads to horizontal rolls which can be tilted into the vertical by a strong updraft.



Here's a diagram of a supercell. Besides the updraft and downdraft, there is a mesocyclone. That's the rotating heart of the storm. It's where the cloud base lowers into a wall cloud and can lead to tornado development.



Here's another image of supercell and the tell-tale signs. Flanking line in the updraft region. Overshooting top looking like cauliflower head. The anvil shield of the cumulonimbus.

# Cloud Types

Scud clouds - ragged



Cumulus



Towering Cumulus



Wall cloud – lowering cloud base/ rotation



Stratus – stable clouds, hugs mountains



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# Tornadoes

## Typical Inland Northwest Tornado

- Less than 5 minutes on the ground
- 100 yards in diameter
- ¼ mile track
- Wind speeds of 85-115 mph



Tornado 5 miles NNW Mold WA  
Douglas County, WA  
Luc Weaver: Facebook



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Tornadoes can and do occur in our region. Luckily isn't not too often and they tend to be small.

# How are tornadoes measured?

## The Enhanced Fujita Scale



EF-Scale	Speed
EF0	65-85 mph
EF1	86-110 mph
EF2	111-135 mph
EF3	136-165 mph
EF4	166-200 mph
EF5	>200 mph



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On average, WA sees about 2 a year and ID sees 5 a year. Tornadoes are measured by an EF scale.

# Are Funnel Clouds tornadoes?

- Funnel clouds stay aloft
- Tornadoes reach the ground

In doubt, check for debris



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Funnel clouds are not the same as a tornado



Tornado video near Northern Quest

# #5 Poll Question



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# Microbursts & Straight Line Winds

- A downdraft or rain can drag strong winds down
- Evaporation can cool a parcel of air causing it to become heavier (more dense)
- Accelerates at the speed of gravity



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Straight line winds – micro bursts.

# Strong or Damaging Winds

- Report any winds estimated to be over 40 mph
- Winds that produce any damage
- **Severe/high winds  $\geq$  58 mph**



Windstorm 2015



April 27, 2019



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Strong damaging winds.

Don't have a weather station?

Not to worry...

Use the Beaufort Wind Chart to estimate wind speeds.

(one is in your handouts)

Beaufort Wind Chart – Estimating Winds Speeds

Beaufort Number	MPH		Terminology	Description
	Range	Average		
0	0	0	Calm	Calm. Smoke rises vertically.
1	1-3	2	Light air	Wind motion visible in smoke.
2	4-7	4	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	11	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	15	Moderate breeze	Dust and loose paper are raised. Small branches begin to move.
5	19-24	21	Fresh breeze	Smaller trees sway.
6	25-31	27	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	32-38	35	Near gale	Whole trees in motion. Some difficulty when walking into the wind.
8	39-46	42	Gale	Twigs broken from trees. Cars rattle on road.
9	47-54	50	Severe gale	Light structure damage.
10	55-63	60	Storm	Trees uprooted. Considerable structural damage.
11	64-73	70	Violent storm	Widespread structural damage.

National Weather Service Spokane, WA

This is included in your notes. A chart to estimate winds.

# Hail

- Strong updraft keeps large chunks of ice aloft
- Circulated within a th
- Collects layers of wat
- Can fall to the ground



Remember- severe hail  $\geq 1$ " diameter



National Weather Service - Spokane, WA

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



Hail can come in all shapes in sizes. The larger the updraft, the larger the hail.

# Heavy Rain

- Report heavy downpours or long periods of rain
- 0.50"+ in 1 hour - convective
- 1"+ in 12 hours or
- 1.5"+ in 24 hours – stratiform – a long steady rain



National Weather Service - Spokane, WA



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



We describe rain as either showery or stratiform. Showery rain some with thunderstorms. Stratiform is a long duration rain. Both can lead to flooding if too much rain falls at one time.

# Flash Flooding



National Weather Service - Spokane, WA

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



Flash flooding is when too much water inundates an area either from heavy rain or a dam release of water.



Here's a video of recent flooding.

# Flooding

Rising water on rivers, streams & low lying areas



National Weather Service - Spokane, WA

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



Our region experiences flooding most years. Last year was an active year for flooding, not really from river flooding but from local urban flooding as in Pullman, Moscow, Spokane, Wenatchee and Kamiah.

# Mud and Debris Flows

Water-saturated rock, mud & debris moving down a slope



National Weather Service - Spokane, WA

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



Too much rain can cause mud slides and debris flows. Areas most susceptible are steep slopes or burn scars.

# Post Fire Floods

## Debris Flows & Rock Slides



National Weather Service - Spokane, WA

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



The post fire floods are still seen in the aftermath of wild fires for several years after the burn. Here's was flooding experienced near Wenatchee last year.

# Dust Storms



National Weather Service - Spokane, WA

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



Strong winds and dry conditions can kick up dust and dirt and make it airborne, reducing visibilities. These can be called haboobs. Recently we've experienced blowing dust on I-90 just this month from strong winds.

# Lightning



National Weather Service - Spokane, WA

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



Lightning comes with each thunderstorm and can be hazardous if you are caught in the storm. Research has shown the more frequent the lightning strikes, the stronger the storm.



Lightning develops from a charge separation in the storm of positive and negative charges. The merging of these charges leads to the discharge. Be careful if you are caught outside in a thunderstorm, especially if your hair stands on end. Lightning may be about to strike you.

# Weather Spotter Safety

- **Personal Safety - #1 priority**
- **Adhere to ACES concept**
  - Awareness, Comms, Escape Route, & Safe Zone
- **Be extra careful at night**
- **Never put yourself in harm's way.**
  - Don't drive through flooded roadways
  - Don't travel through downed power lines
  - Don't be too near fallen objects or structures
- **Stay current on the weather**



National Weather Service - Spokane, WA

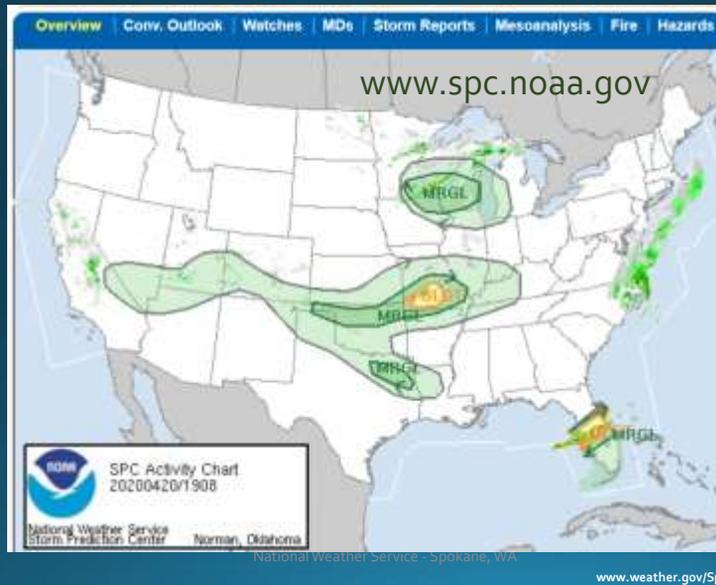
[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



Please remember to be safe while being a weather spotter.

# Getting the Word Out

## National Storm Prediction Center



How does one know when thunderstorms are in the forecast? Following the Storm Prediction Center is a good source for thunderstorm threat across the country.

## Understanding Severe Thunderstorm Risk Categories

THUNDERSTORMS (no label)	1 - MARGINAL (MRGL)	2 - SLIGHT (SLGT)	3 - ENHANCED (ENH)	4 - MODERATE (MDT)	5 - HIGH (HIGH)
No severe* thunderstorms expected	Isolated severe thunderstorms possible	Scattered severe storms possible	Numerous severe storms possible	Widespread severe storms likely	Widespread severe storms expected
Lightning/flooding threats exist with all thunderstorms	Limited in duration and/or coverage and/or intensity	Short-lived and/or not widespread, isolated intense storms possible	More persistent and/or widespread, a few intense	Long-lived, widespread and intense	Long-lived, very widespread and particularly intense
					
<ul style="list-style-type: none"> <li>• Winds to 40 mph</li> <li>• Small hail</li> </ul>	<ul style="list-style-type: none"> <li>• Winds 40-60 mph</li> <li>• Hail up to 1"</li> <li>• Low tornado risk</li> </ul>	<ul style="list-style-type: none"> <li>• One or two tornadoes</li> <li>• Reports of strong winds/wind damage</li> <li>• Hail - 1", isolated 2"</li> </ul>	<ul style="list-style-type: none"> <li>• A few tornadoes</li> <li>• Several reports of wind damage</li> <li>• Damaging hail, 1 - 2"</li> </ul>	<ul style="list-style-type: none"> <li>• Strong tornadoes</li> <li>• Widespread wind damage</li> <li>• Destructive hail, 2" - 4"</li> </ul>	<ul style="list-style-type: none"> <li>• Tornado outbreak</li> <li>• Dense hail</li> </ul>
<small>* NWS defines a severe thunderstorm as measured wind gusts to at least 58 mph, and/or hail to at least one inch in diameter, and/or a tornado. All thunderstorm categories imply lightning and the potential for flooding. Categories are also tied to the probability of a severe weather event within 25 miles of your location.</small>					



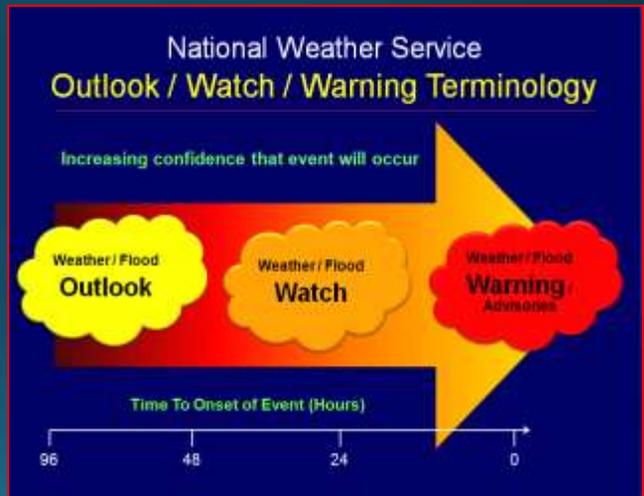
National Weather Service  
www.spc.noaa.gov



SPC identifies thunderstorm threat based on these severe thunderstorm risk categories. Our area may see general thunder to level 1 to 2.

# NWS Terminology

- **Watch:** Conditions are favorable, but not imminent, for severe weather or flooding
- **Warning:** Severe weather or flooding is imminent or already occurring.
- **Advisory:** Minor nuisance or inconvenient weather or flooding is expected, but in most cases not anticipated to adversely affect plans.



National Weather Service Spokane, WA

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



SPC coordinates with the local offices on spreading the word on severe thunderstorms. Based on confidence and timing, different products are issued. They include: Outlooks, Watches, Warnings and Advisories.

# NWS Weather Warnings

Short Fused

- Tornadoes
- Severe Thunderstorms
- Flooding



- Snow, Ice, & Cold
- Wind
- Fire
- Freeze

Long fused



National Weather Service - Spokane, WA

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



These are the types of weather warnings issues the NWS. Those in orange are short fused warnings – lasting minutes to an hour or two. Those in blue are long fused warnings – issues for hours to a day or so.

# #6 Poll Question



National Weather Service Spokane



# Stay Informed NOAA Weather Radio

Continuous operation.

Battery backup capable.

Handheld device great for  
outdoor activities.

Can drive across the country and  
get info anywhere along path.



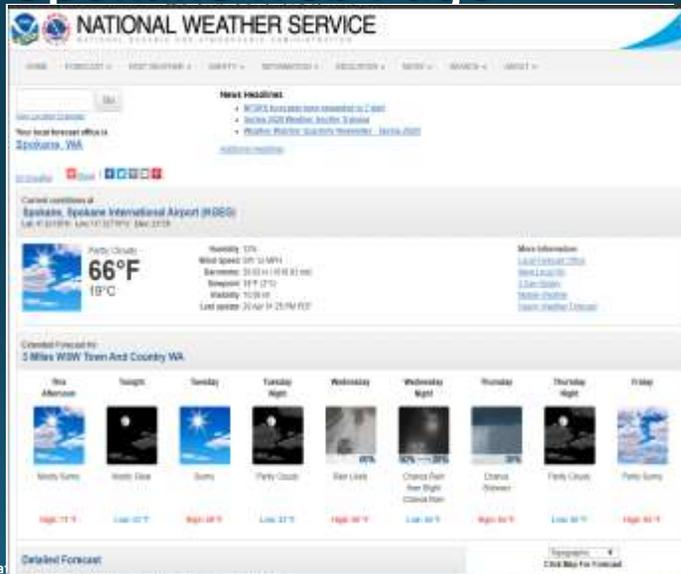
National Weather Service - Spokane, WA

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



Stay informed with NOAA weather radio for current warnings and forecasts. These work well when a transmitter is close by and can alert when a short fused warning is issued for your location.

# Stay Informed NWS Spokane Web Page



NWS web page is great way to stay informed online. There is a map that highlights the current weather products out for the region. Plus the map is clickable to get an individual forecast for your area.

# Stay Informed On Your Phone

## Mobile.weather.gov



Mobile.Weather.gov  
Smart Phone Enabled



Type in desired location  
Hit 'Go'



Up pops current  
conditions, hazards, and  
forecast



Can add this website to  
your 'Home' screen for  
quick access



Home Screen



National Weather Service - Spokane, WA

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



You can stay informed on your phone. Just go to [mobile.weather.gov](http://mobile.weather.gov), request your location and add to homescreen.

# Other Ways to Get Involved

- Weather Spotter
- Join the Community Collaborative Rain, Hail, and Snow Network
- Join the Citizens Weather Observers Program



National Weather Service - Spokane, WA

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



We have covered a lot of material – mostly on being a weather spotter. But there are other weather volunteer programs that may interest you.

# Community Collaborative Rain, Hail and Snow Network

www.cocorahs.org

COMMUNITY COLLABORATIVE RAIN, HAIL & SNOW NETWORK  
 "Because every drop counts!"

Welcome to CoCoRaHS! "Volunteers working together to measure precipitation across the nation."

Who uses CoCoRaHS Observations?

Reports received today 4/22/2020 as of 4:26 PM EDT

Daily	Multi-day	Sps/Ws	Hail	Conditions	ET
10,433	63	5	7	9	51

Daily Precipitation (Inches +.01)  
 USA  
 4229820

Legend:  
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# Rain Measurements

- Getting a Rain Gauge – [www.weatheryourway.com](http://www.weatheryourway.com)
- Set it up in an open area, preferably away from trees
- Reading a Rain Gauge



The surface of the water in the gauge looks curved. How do I know where to read?

As water fills up the measuring tube, a curved surface is formed called a **meniscus**. This meniscus is formed by the surface tension of a liquid in contact with the sides of the tube.



Always read the bottom of the **meniscus**, when the making your daily rain measurements.



National Weather Service Spokane



Rain measurements are quite straight forward. You will need a standard 4" rain gauge that you can get online. Then read it & report daily, even report zeros.

# Snow Measurements

- **Snowfall:**  
New snow in tenths of an inch
- **Snow water equivalent (SWE):** Melted snow
- **Snow depth:**  
Total of new & old snow on the ground



National Weather Service Spokane



Snow measurements get a bit more involved. This includes: snowfall, melted down snow in the gauge and snow depth (total snow on the ground). There are great videos available on the cocorahs web site to assist you.

# Inland NW CoCoRaHS Observers



100+ in  
the Inland  
NW



Service Spokane



We have a network of around 100 observers across the region. It's terrific source of data for the NWS

# Citizen Weather Observers Program

## CWOP



[www.wxqa.com](http://www.wxqa.com)

- Have a weather station and want to share data online
- Has a PC and Internet access
- Register Online & Receive a weather station ID
- Transmits data every 15 mins



National Weather Service - Spokane, WA

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



If you have a weather station and can hook it up online, consider joining the CWOP program. It's a great way of sharing weather data from your location.

# Different programs - All useful to the NWS

## Spotter

Severe Weather

No instruments  
required

Event driven

Weather.gov

## CoCoRaHS

Precipitation  
only

Rain gauge  
required

Daily  
commitment

Cocorahs.org

## CWOP

Weather data

Weather station

Daily  
commitment

Wxqa.com



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www.weather.gov/Spokane



As you can see there are different programs, at different levels and they are all useful to the NWS

# #7 Poll Question



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# Spring & Summer Outlook 2020



National Weather Service Spokane, WA

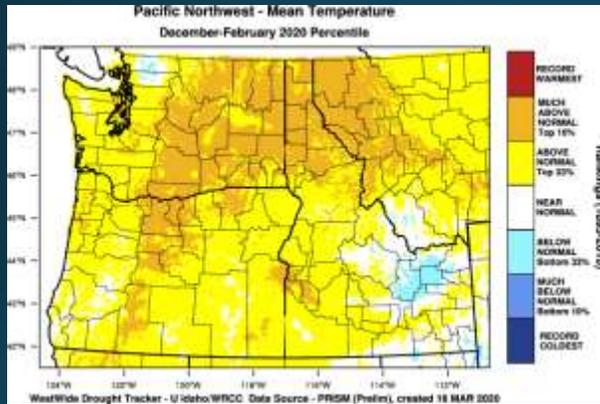
[www.weather.gov/Spokane](http://www.weather.gov/Spokane)



In the home stretch, let's dive into the spring/summer weather outlook

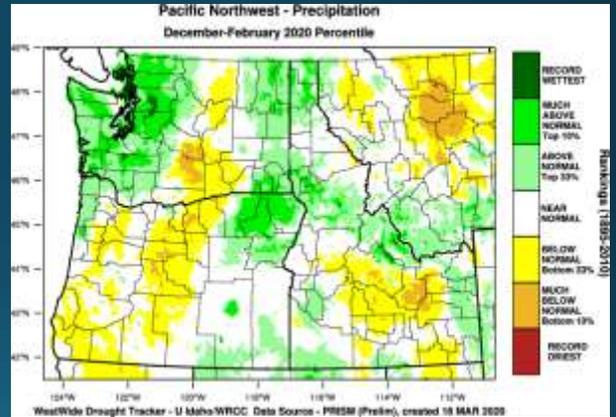
# Winter in Review...

## Temperatures



Warmer than normal in most areas

## Precipitation



Wetter than normal - Cascade crest,  
extreme eastern WA and north ID  
Drier than normal - central WA



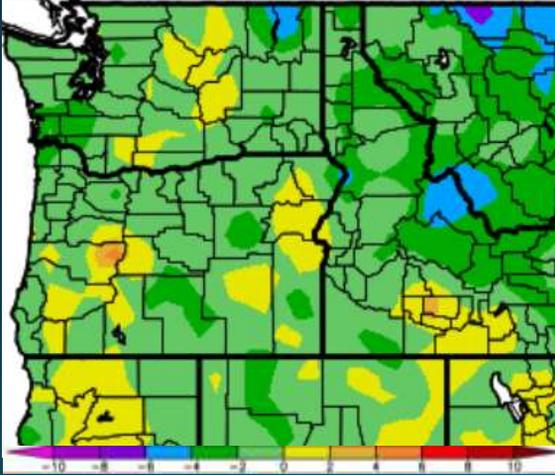
National Weather Service Spokane



But first, let's review our winter. Overall, we were milder than normal in most areas for Dec-Feb. Last winter's weather was dominated by a westerly flow aloft that brought the majority of the precipitation to western WA to the Cascades and then to extreme eastern WA into north ID. Much of central WA was in the rain shadow and drier than normal.

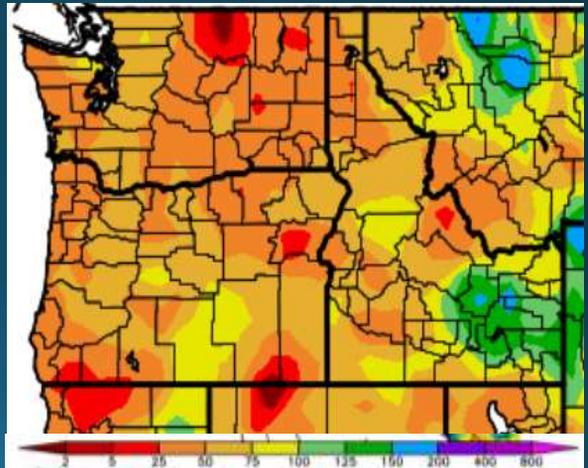
# So far this Spring....

Temperatures - March-mid April



Cooler than normal in most areas

Precipitation - March-mid April



Drier than normal - regionwide

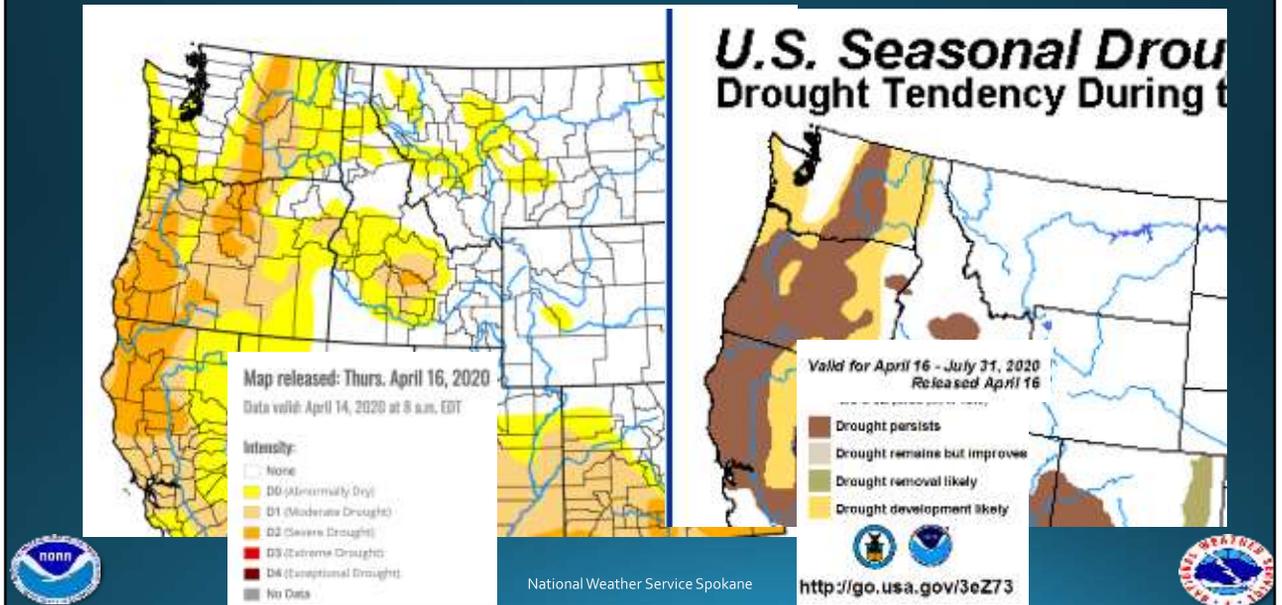


National Weather Service Spokane



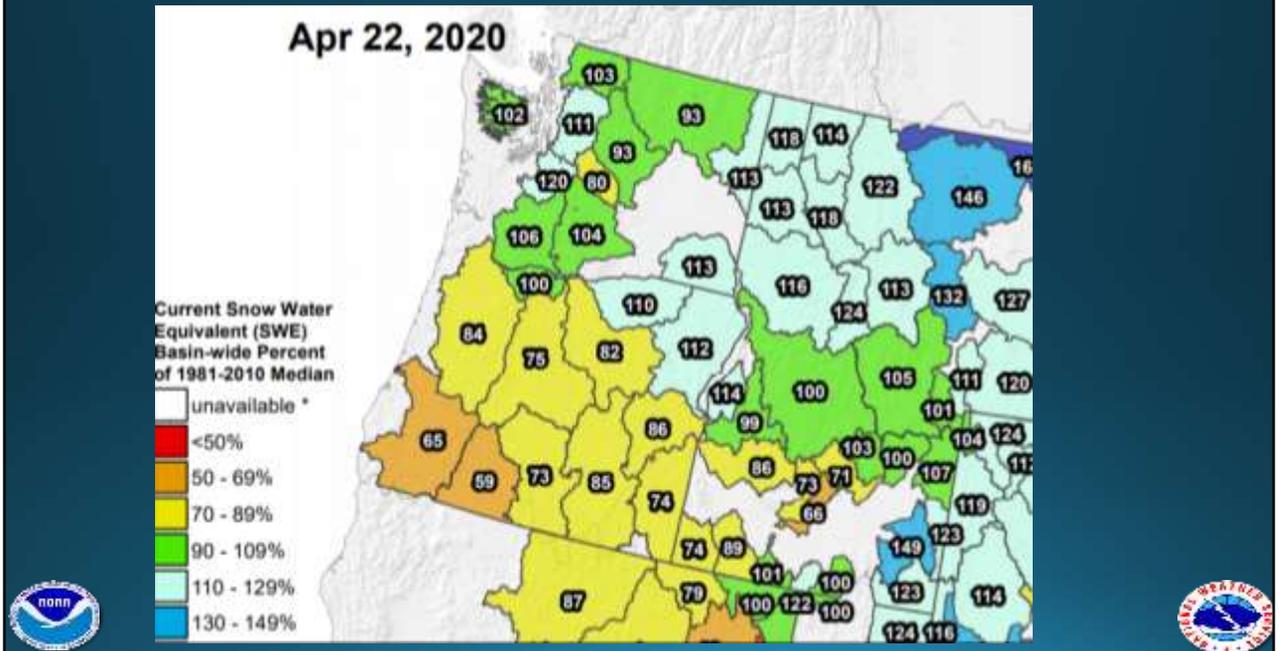
So far this spring or from March to mid April, the weather pattern has not been so active. Temperatures have been at or slightly cooler than normal while precipitation has been drier than normal.

# U.S. Drought Monitor & Outlook



So it's no surprise, drought conditions have expanded across central WA into parts of eastern WA and much of OR. The drought outlook shows signs it will persist through much of the warm season this year.

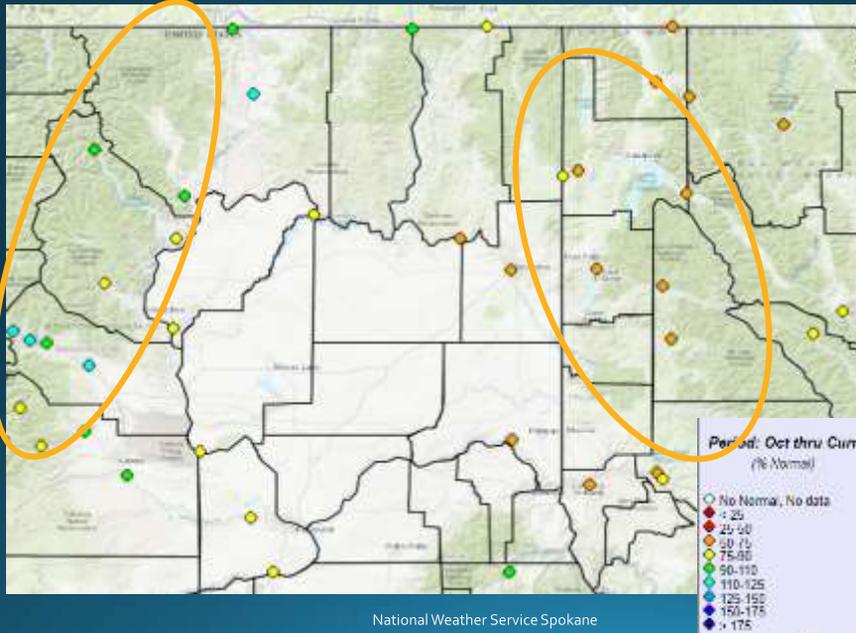
# Mountain Snow Pack



Meanwhile, the winter storms benefited the mountains and a good solid snowpack resides above 5K ft. Based on our coolish weather, the snow pack has melted off slowly.

# Current Runoff

Currently near normal for the Cascades



Currently lower for northeast WA and north ID

Current runoff has shown lower levels across eastern WA into north Idaho, while parts of the Cascades have shown more near normal levels.

# Peak Flow & Water Supply Outlooks



Low chances  
of flooding

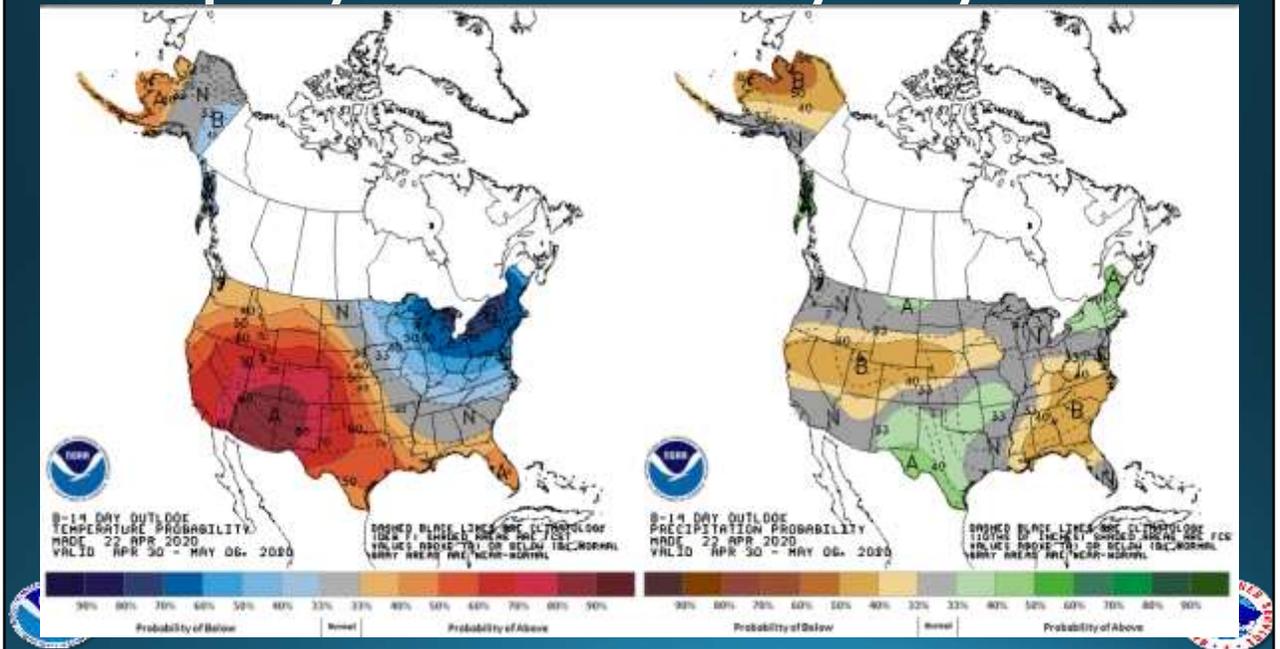
Water Supply looks  
good regionwide



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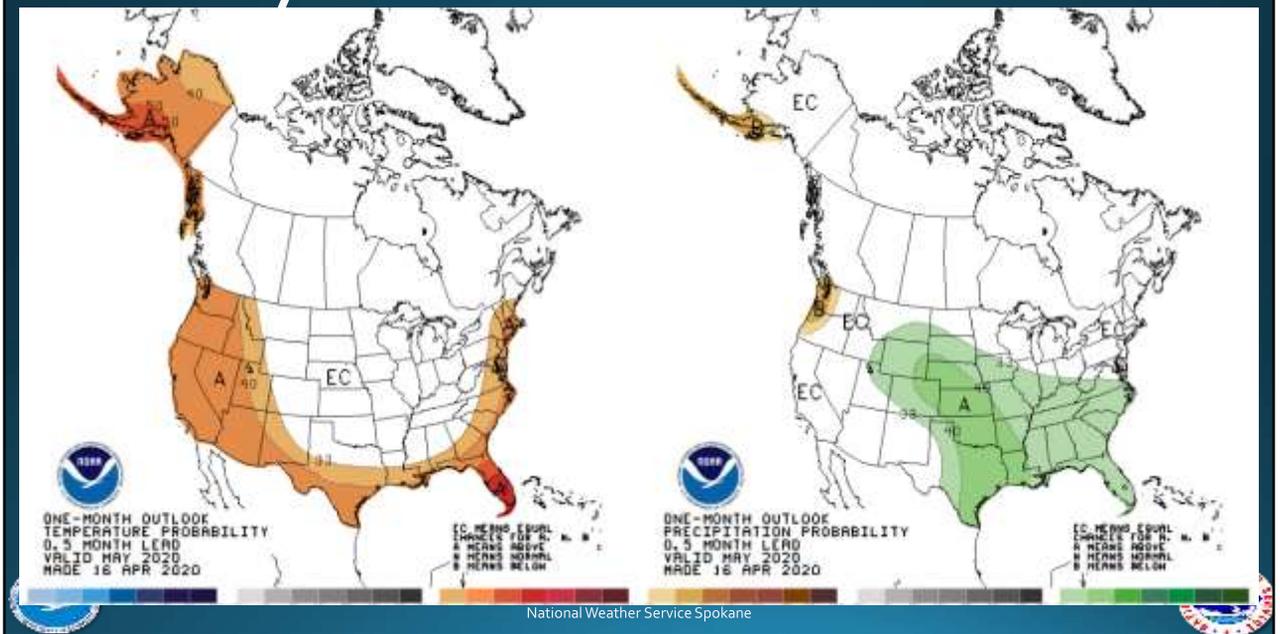
The peak flow outlook shows low chances of flooding – although under rapid warm up or heavy precipitation event flooding is possible. Overall, based on the current snow pack, water supply looks good for the region

# 8-14 Day Outlook – early May



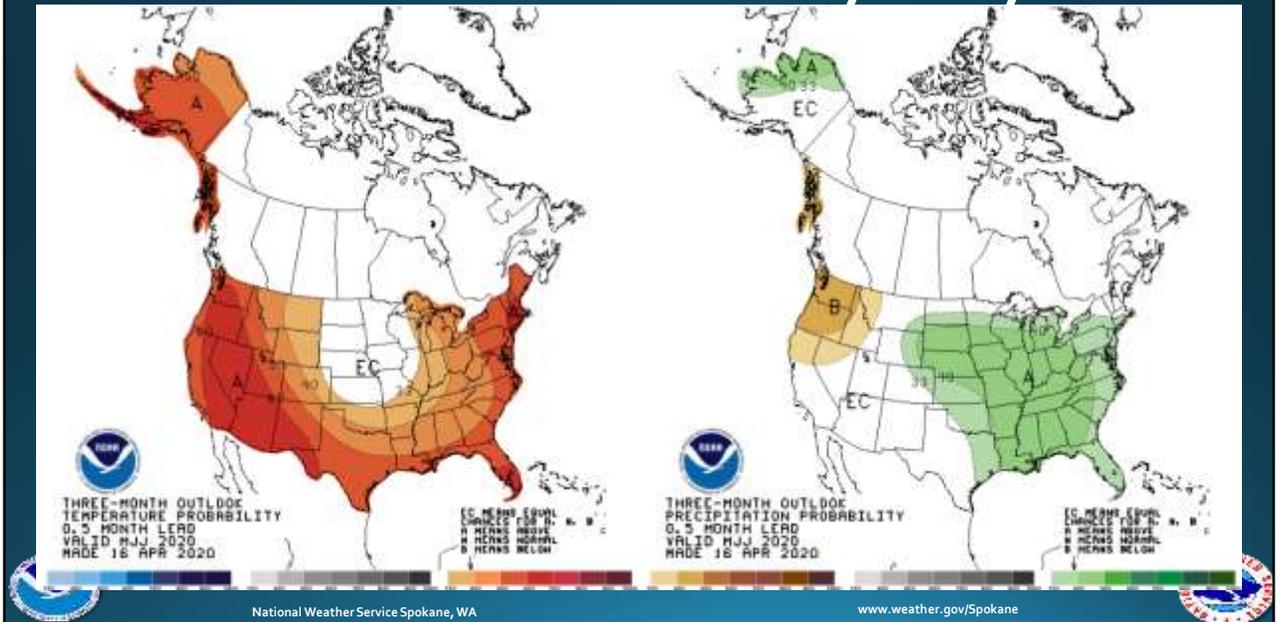
As we peek into early May, expect more normal temperatures and more unsettled spring weather.

# May Outlook



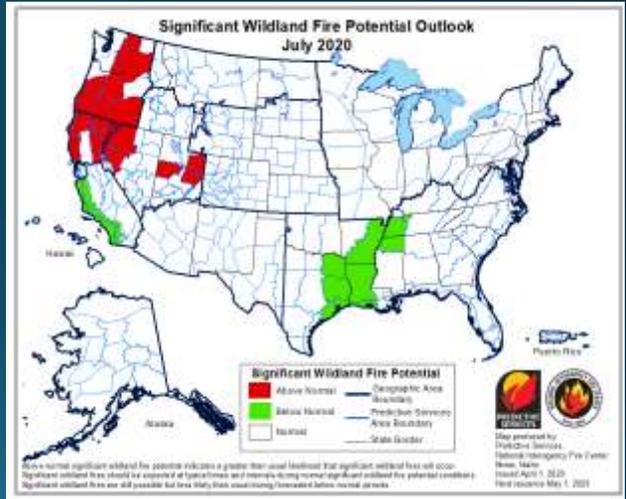
The outlook for the rest of May looks at a better chance of above normal temperatures and equal chances of at, below or normal precipitation.

# Summer Outlook: May- July



By the summer months, there looks to be better chances for a warmer and drier summer.

# Wildland Fire Potential Outlook



National Weather Service Spokane, WA

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



This looks to impact the fire potential outlook with the risk of wildfires increasing a little sooner than normal, by July and beyond for the Inland NW. Although with a drier summer, this may limit the amount of thunderstorms in our region.

# Spring-Summer Outlook Overview



- Warmer & Drier conditions favored
- Drought conditions persist – especially central WA
- A little earlier start to fire season. Fire potential looks high by July and beyond.

LET'S WRAP THIS UP



National Weather Service Spokane, WA

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



Summary – now let's wrap this up.

# Spotter Resources Online

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

- Latest radar and satellite images
- Current watches, warnings, forecasts
- Latest NWS Storm Reports
- NOAA Weather Radio frequencies
- Newsletter
- Spotter Guide



The screenshot shows the 'Spotter Resource Page' for the National Weather Service in Spokane, WA. The page title is 'Spotter Resource Page' with a breadcrumb trail: 'Home > Spokane, WA > Spotter Resource Page'. Below the title is a navigation menu with links for 'Current Watches', 'Current Conditions', 'Radar', 'Forecasts', 'Storm and Lake', and 'Climate and Past Weather'. The main heading is 'Spotter Resource Page' followed by a sub-heading 'Send Spotter Reports'. A note states: 'This website is an easy method to send spotter reports online through your computer! You have to be a registered weather spotter for the brand mentioned to gain access to the system.' Below this are several links: 'Weather Spotter Sign up Form', 'Weather Spotter Checklist', 'Ways to be a Weather Volunteer', 'Weather Watcher Newsletter', 'Virtual Training - Dec 2016 notes', 'Training Schedule', 'Virtual Training - June 2017', and 'Latest NWS Storm Reports'. There are two sections of text: 'What is an NWS Weather Spotter?' and 'What Kind of Weather Do Spotters Report?'. The first section explains that the NWS Spokane is looking for volunteers who would like to become weather spotters, and that their reports are used to determine the strength of a storm and its effects on the surrounding area. The second section lists types of weather to report, such as freezing rain, snow, and flooding, and provides a link to a 'Spotter Sign-Up Form'.



National Weather Service - Spokane, WA

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



Material is available online – NWS Spokane web page.

# MetEd

[www.meted.ucar.edu](http://www.meted.ucar.edu)



- 300 FREE modules
- Skill Levels 0-5
- Wide range of topics
  - Spotter Basics
  - Convective Storms



National Weather Service - Spokane, WA

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



More training is available at the MetEd site – all free.

# Congratulations!!!

You have now completed Basic Weather Spotting



Congrats! You have completed basic weather spotter training. You can expect an email in the coming days to compile your contact information and receive a weather spotter certificate.

The End

*NWS + Weather Spotters = **Saved Lives***

1-800-483-4532

robin.fox@noaa.gov

**Thank You!**



National Weather Service - Spokane, WA

National Weather Service Spokane, WA



Thank you for joining us this evening. Keep this phone number handy. If you have any questions, try the chat window in the presentation or contact Robin.

Mesocyclone, Kamiah, ID  
7/17/16

# Questions??



National Weather Service - Spokane, WA

National Weather Service Spokane, WA

